FALCONGUIDES®

FORAGING
Arizona

Finding, Identifying, and Preparing Edible Wild Foods in Arizona

CHRISTOPHER NYERGES

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Christopher Nyerges

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GUILFORD,CONNECTICUT

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fruits, to the common urban weeds such as purslane, mallow, and lambs quarter. You'll learn about the edible wild foods and healthful herbs of Arizona. Organized by botanical families with a helpful guide to the environmental zone, this is an authoritative guide for nature lovers and gastronomes. Use Foraging Arizona as a field guide or as a delightful armchair read. No matter what you're looking for, whether it's history of how native plants were used or how you can forage some of your meals at home or on hiking trips, this guide will enhance your next backpacking trip or easy stroll around the garden. Inside you'll find: Detailed descriptions of edible plants; Tips on finding, preparing, and using foraged foods; A glossary of botanical terms; Full-color photos"—Provided by publisher.

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The identification, selection, and processing of any wild plant for use as food requires reasonable care and attention to details since, as indicated in the text, certain parts are wholly unsuitable for use and, in some instances, even toxic. Because attempts to use any wild plants for food depend on various factors controllable only by the reader, the author and The Rowman & Littlefield Publishing Group, Inc. assume no liability for personal accident, illness, or death related to these activities.

This book is a work of reference. Readers should always consult an expert before using any foraged item. The authors, editors, and publisher of this work have checked with sources believed to be reliable in their efforts to confirm the accuracy and completeness of the information presented herein and that the information is in accordance with the standard practices accepted at the time of publication. However, neither the authors, editors, and publisher nor any other party involved in the creation and publication of this work warrant that the information is in every respect accurate and complete, and they are not responsible for errors or omissions or for any consequences from the application of the information in this book. In light of ongoing research and changes in clinical experience and in governmental regulations, readers are encouraged to confirm the information contained herein with additional sources. This book does not purport to be a complete presentation of all plants, and the genera, species, and cultivars discussed or pictured herein are but a small fraction of the plants found in the wild, in an urban or suburban landscape, or in a home. Given the global movement of plants, we would expect continual introduction of species having toxic properties to the regions discussed in this book. We have made every attempt to be botanically accurate, but regional variations in plant names, growing conditions, and availability may affect the accuracy of the information provided. A positive identification of an individual plant is most likely when a freshly collected part of the plant containing leaves and flowers or fruits is presented to a knowledgeable botanist or horticulturist. Poison Control Centers generally have relationships with the botanical community should the need for plant identification

arise. We have attempted to provide accurate descriptions of plants, but there is no substitute for direct interaction with a trained botanist or horticulturist for plant identification.

In cases of exposure or ingestion, contact a Poison Control Center (1-800-222-1222), a medical toxicologist, another appropriate health care provider, or an appropriate reference resource.

TO DR. LEONID ENARI, MY TEACHER, MENTOR, AND FRIEND

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About the Author

ACKNOWLEDGMENTS

After I had already spent several years learning botany and ethnobotany in high school and college, through books and lectures, often very piecemeal and second hand, I had the very good fortune in approximately 1974 to meet Dr. Leonid Enari, the senior biologist at the Los Angeles County Arboretum, who was teaching his course “Edible, Medicinal, and Poisonous Plants.” His knowledge was astronomical. He eagerly worked with me on my first book, and he assisted me in compiling lists of safe and primarily edible plant families. His unique background in botany and chemistry made him ideally suited as a primary source of information. He acted as my teacher, mentor, and friend, and he always encouraged my study and teaching in this field. I felt a great loss when he passed away in 2006 at the age of eighty-nine. Thus, it is to Dr. Enari that I dedicate this book, *Foraging Arizona*.

At the same time I met Dr. Enari, I met Mr. Richard E. White, who founded the nonprofit WTI and whose organization sponsored the walks that I began leading in 1974. White was instrumental in showing me how to plan activities, how to teach, and how to think.

I also had many other mentors, teachers, and supporters along the way. These include (but are not limited to) Dr. Luis Wheeler (botanist), Richard Barmakian (nutritionist), Dorothy Poole (Gabrielino “chaparral granny”), John Watkins (a Mensan who “knew everything”), Mr. Muir (my botany teacher at John Muir High School), and Pascal Baudar and Mia Wasilevich, both wild-food cooking experts. These individuals all imparted valuable information to me, and they have all been my mentors to varying degrees; I also thank them for their influence. Euell Gibbons also had a strong impact on my early studies of wild food, mostly through his books; I met him only once.

Of course, there have been many others who taught me bits and pieces along the way, and I feel gratitude for everyone whose love of the multifaceted art of ethnobotany has touched me in some way. Some of these

friends and strong supporters have included Peter Gail, Gary Gonzales, Dude McLean, Alan Halcon, Paul Campbell, Rick and Karen Adams, Barbara Kolander, Jim Robertson, and Timothy Snider. I also want to extend special thanks to my beloved Helen, for her support of this project, with both photos and ideas.

Yes, I took many of the photos in this book, but I couldn’t do it all myself. Rick Adams deserves special thanks for the many trips we took together to get many of the photos. Other folks who contributed photos include Dr. James Adams, Algie Au, Barry Breckling, John Doyen, Trent Draper, Barbara Eisenstein, Kelly Haag, Barbara Kolander, Louis-M. Landry, Jeff Martin, Daniel McCarthy, Jean Pawek, Gina Richmond, Al Schneider, Bob Seebeck, Bob Shuman, Helen Sweany, Dr. Amadej Trnkoczy, Lily Jane Tsong, Mark Merriweather Vorderbruggen, Clint Wharton, Mary Winter, and Helen Wong.

INTRODUCTION

We owe a debt of gratitude to the generations of indigenous Native peoples whose lives and livelihoods depended on the flora of the earth for their survival: food, medicine, fiber, soap, fire, tools, and more. Much of this knowledge has been passed down generation to generation, and much has been rediscovered by researchers. Some is actively kept alive.

Many of the living old ways have been lost, but the knowledge of how to utilize the plants of the land has not been entirely forgotten. Various generations have realized the great value of knowing how to identify and use what nature has provided, even though this information waxes and wanes in importance in the general viewpoint.

When there is war or depression or famine, we desire to rekindle this link to our past and hope for our future.

Arizona has a rich recorded history going back perhaps a few thousand years with the records of the various indigenous peoples living here. The ebb and flow of the Anasazi, the Hohokam, the Mogollon, and all the more recent peoples provides endless lessons for archaeology students and sociologists. One of the livelier presentations of the peoples who flowed through Arizona is found in Craig Child's book *House of Rain*, where he traces the flow of people through ancient settlements and ancient trails, through Arizona and beyond.

Our focus here is the flora that sustained cultures and generations of people and how these plants were used. Today, in addition to the native flora, we have an abundance of introduced plants and common edible weeds throughout Arizona, which were used for generations throughout Europe and Asia. Sometimes these introduced florae are a blessing; sometimes, they are not. Because the non native florae are so abundant and generally regarded as unwanted "weeds," they should be considered the first choice of plants to include in your meals. The nonnatives are generally not as sensitive as the natives and would actually survive well if carefully pruned to provide for your meals.

SCOPE OF THIS GUIDE

Foraging Arizona covers plants that can be used for food and that are common in Arizona. We are not attempting to cover every single edible plant that could possibly be used for food, or those that are very marginal as food. We are not including any plants that are endangered. Our focus is on those wild foods that are widespread, easily recognizable and identifiable, readily harvestable, and sufficient to create meals. Many of the wild edibles that are too localized, or only provide a marginal source of food, are not included.

Since this is primarily a book of edible plants, medicinal properties of the plants will be addressed in passing, and we will provide some ideal references in the rear of the book.

ORGANIZATION OF GUIDE

The plants in this book are organized according to the system used by botanists, which is by families.

Many books on plants organize them by flower color or environmental niche, both of which have their adherents and their pitfalls. However, this book is categorizing the plants according to their families, which gives you a broader perspective on many more plants than can be reasonably put into one book. As you will see, many of the genera (and some families) are entirely safe to use as food. This is how I was taught by my mentor, Dr. Leonid Enari, because he believed that—though there is no shortcut to learning about the identity and uses of plants—understanding the families will impart a far greater insight into the scope of "wild foods."

We'll start with the "lower" plants, then the gymnosperms (i.e., the cone-bearing plants), then the flowering plants in alphabetical order by their Latin family names.

MAJOR ENVIRONMENT TYPES

In our selection of plants for *Foraging Arizona*, we've attempted to include common edible plants from the different environments of the state. Below, you will see the broad categories of desert, chaparral, mountains, riparian, and urban. But keep in mind that there is often a lot of overlap from one ecosystem to another. Oaks, for example, can be found everywhere.

As a handy reference to the plants in this book, note the biological zone where each plant is most likely to be encountered. Some plants are only

found in one zone, but others can be found in several of these zones.

PLANTS LISTED BY ENVIRONMENT TYPE

BY GINA RICHMOND

Arizona can be divided into three distinct zones: the high deserts and mountains of the Colorado Plateau, the low deserts and valleys of the Basin and Range, and a narrow Transition Zone between the two, featuring distinctive landforms and ecological characteristics from both zones. Elevation and rainfall determine where plants grow; many plants occur in more than one zone.

COLORADO PLATEAU

The Colorado Plateau encompasses the higher elevations of northeast Arizona, eastern Utah, northwest New Mexico, and southwestern Colorado. The Plateau is home to the Mogollon Rim, the elevated slopes define the southern edge of the Plateau—which joins the Basin and Range Zone. The Colorado River flows southwest through the plateau into the Grand Canyon. This high desert zone has dense thickets of chaparral-type vegetation and scattered forests with juniper, pinyon pine, oak, manzanita, biscuitroot, walnut, grape, creosote.

Plants in this book that might be found here include:

- Juniper
- Pine
- Oak
- Manzanita
- Biscuit-root
- Walnut
- Grape
- Creosote

- Plantago
- Chickweed
- Shepherd’s purse
- Salsify

TRANSITION ZONE

The Transition Zone is the land that separates the hot, dry Basin and Range to the south and the cooler, arid Colorado Plateau to the north. This area consists of a series of rugged mountain ranges and valleys and is home to vast mixed conifer forests. Pine, juniper, desert willow, onion, yucca, acacia, and jojoba are found in this zone.

Plants in this book that might be found here include:

- Pine
- Juniper
- Onion
- Yucca
- Shepard’s purse
- Jojoba
- Amaranth
- Salsify
- Chickweed

THE BASIN

The Basin and Range Zone extends into the southern and western parts of Arizona and includes most of its deserts. It is also part of a larger area that covers most of Nevada, southwestern New Mexico, western Utah, and northwestern Mexico. This semidesert is characterized by little to no rainfall and numerous parallel mountain ranges with broad, nearly flat basins. The Sonoran Desert spans the southern half of the Basin and Range. In addition to saguaro cactus, paloverde, ocotillo, grape, creosote, mesquite, ironwood, blue elderberry, yucca, and cacti also occur in this zone.

Plants in this book that might be found here include:

- Saguaro

- Opuntia
- Organ pipe cactus
- aloverde
- Grape
- Creosote
- Mesquite
- Elderberry
- Yucca
- Plantago
- Salsify
- Shepard’s purse
- Dandelion
- Russian thistle

HIGHER ELEVATIONS

The higher-elevation mountain areas experience higher winds and colder, wetter conditions than the surrounding flatland. The increased snow and rain accumulations in the mountains provide water to the riparian areas below. With elevations generally above 6,000 feet, this zone supports a diverse array of plants including fir, oak, spruce, quaking aspen, pine, elderberry, juniper, bracken, miner’s lettuce, coffeeberry, buckwheat, strawberry, blue dicks, and maple.

RIPARIAN

Riparian zones are plant communities located near a permanent source of water. They occur at every elevation; they are considered a transition zone between land and water. Riparian areas at higher elevations may have water available year-round, whereas desert washes only have water for a short time each year. They are an important resource because they supply food, water, and shelter for a wide variety of plants and animals. Common plant species found in this zone are cattails, rushes, watercress, blue elderberry, willow, cottonwood, monkey flower, veronica, rose, and nettle.

Plants in this book that might be found in riparian areas include:

- Willow
- Cattail

- Watercress
- Elderberry
- Monkey flower
- Veronica
- Rose
- Nettle
- Curly dock
- Mint
- Dandelion
- Chickweed
- Thistle

CHAPARRAL

A large part of Arizona's chaparral zone is concentrated in the central part of the state, mostly at elevations between 3,000 to 5,500 feet. This plant community experiences a Mediterranean climate, which means wet winters and hot, dry summers. The plants in these mostly mountainous areas are drought tolerant with leathery leaves and tough woody stems. Common species in this zone are scrub oak, ephedra, biscuit-root, Oregon grape, manzanita, agave, and buckwheat.

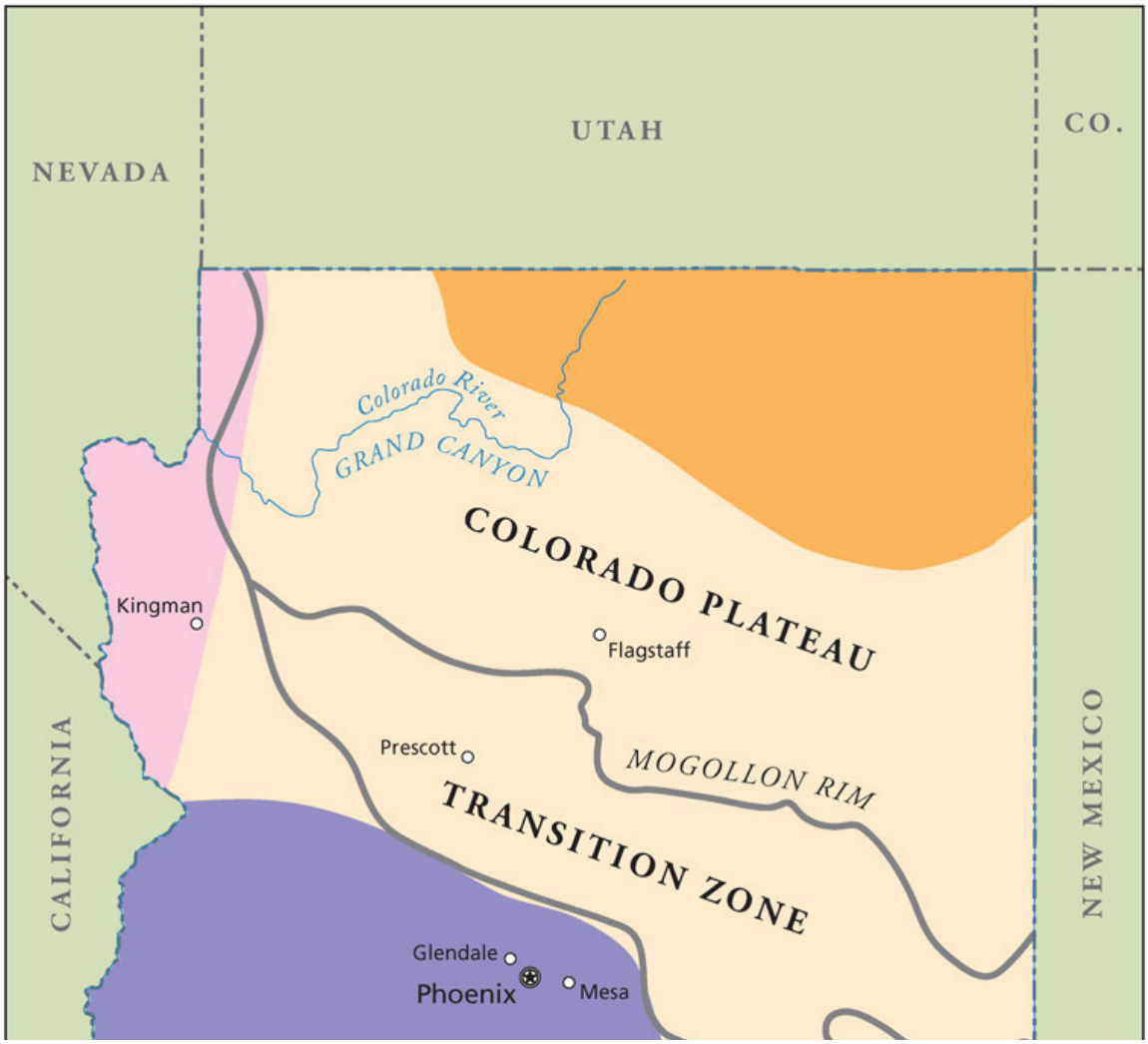
URBAN

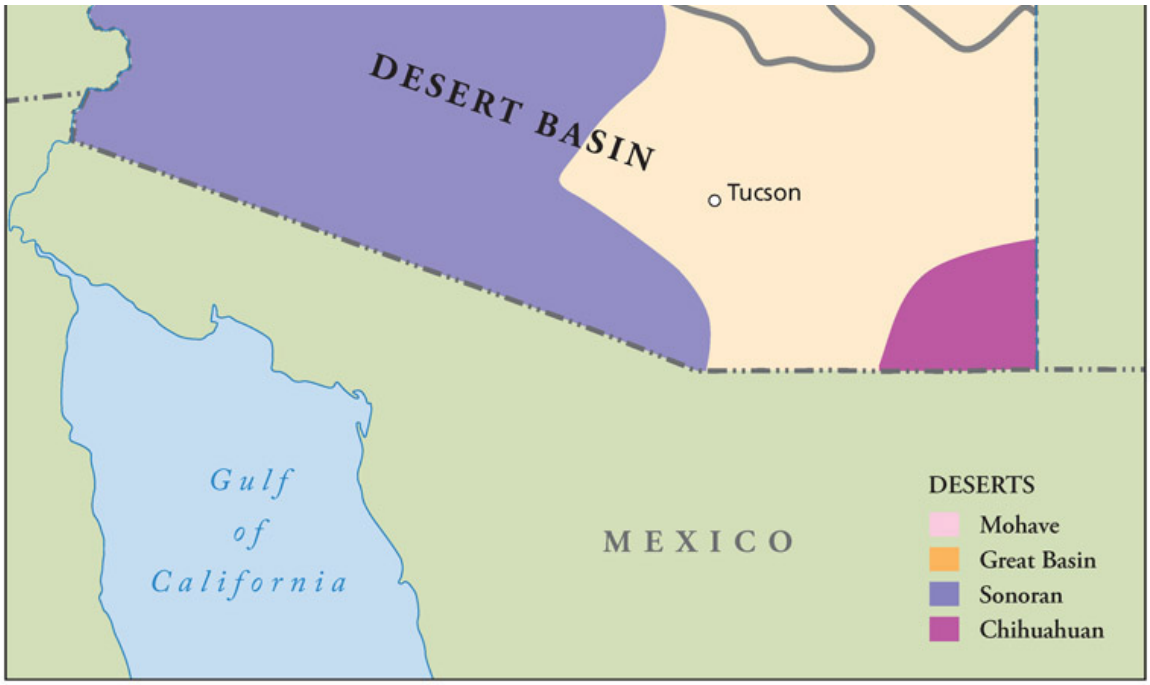
Many of the plants found growing near human development are considered weeds. A weed is a plant that has either escaped cultivation or was introduced from elsewhere. These plants can adapt to a variety of urban settings and spread rapidly in ideal conditions. They are usually common in urban areas and occur in landscaping, vacant lots, along roadways, in ditches, and most unmaintained or overgrown fields. Some of the native plants that grow in or near developed areas include paloverde, manzanita, ephedra, willow, serviceberry, mesquite, and buckwheat.

Some of the plants that may be found in the urban areas include:

- Carrot
- Chicory
- Prickly lettuce
- Sow thistle

- Dandelion
- Thistle
- Salsify
- Mustard
- Filaree
- Mallow
- Palms
- Plantain
- Lamb’s-quarter
- Carob
- Grass
- Russian thistle
- Shepard’s purse
- Amaranth




DESERT BASIN
Tucson
Gulf of California
MEXICO
DESERTS
Mohave
Great Basin
Sonoran
Chihuahuan

COLLECTING AND HARVESTING WILD FOODS

Because more and more people want to learn how to “live off the land” and use wild plants for food and medicine, please practice sustainable collecting and harvesting methods. Don’t neglect the wild foods in your own yards. And if you have the space, you should grow (or allow to grow) many of the wild plants that you enjoy eating.

Always make sure it is both legal and safe for you to harvest the wild foods. Legality can usually be determined simply by asking a few questions or making a phone call. Don’t be surprised if you are then asked *what* you intend to pick. Because many of the plants listed in this book are often regarded as “nuisance weeds,” most property owners will allow you to come in and remove the plants that they do not want.

Remember, many of the edible introduced “weeds” are found within the urban areas, and you can use wild foods regularly without going far from home.

In some cases, when we’re dealing with public lands, the issue of legality may be a bit more difficult to ascertain.

You also want to be safe, making sure there are not agricultural or commercial toxins near and around the plants you intend to harvest. Again, it pays in the long run to carefully observe the surrounding area and to ask a few questions.

Unless it is the root that you are using for food, you should never need to uproot a plant, especially if it is only the leaves that you intend to eat. I have documented in my book *Extreme Simplicity* how I was able to extend the life of many annual weeds by carefully pinching back the leaves that I wanted to eat and then allowing the plant to grow back before picking again. Even when I believe that someone else will pull up the plant later, or plow the area, I still do not uproot the plants on general principle. The root system is good for the soil and, if the plant’s roots are left alone, it will

continue to manufacture oxygen. Various insects and birds might eat the bugs on the plant or its seeds. Let life continue.

When you are harvesting greens, snippers can be used, but usually, nothing is needed but your fingernails—maybe a sharp knife. Cut what you need, don't deplete an area, and move on.

Harvesting seeds is done when the plant is at the end of its annual cycle, but there is still no reason to uproot the plant. When I harvest curly dock or lamb's-quarter seed, I carefully try to get as much into my bag as possible. I know that some seed is being scattered, and that's a good thing for next season. I also know that a few seeds are still on the stalk, and that's a good thing for the birds in the area. I nearly always harvest in an area of abundance. If there are very few specimens there, my usual course of action simply is to leave them alone.

You will note when you read this text that I advise foragers to leave the wild onions in the ground and to eat the greens. In cases of abundance, your thinning the roots will help to stimulate more growth, and that is a good thing, akin to the passive agricultural practices of the Native Americans who exclusively once lived here.

In sum, you must observe the legality of wherever you choose to collect wild plants. But beyond "legality," it is my hope that you work to develop a mindset of ethicality and sustainability as a forager. In the old times, the indigenous people of Arizona automatically practiced sustainable harvesting because the alternative for not doing so was starvation! We seem to think (foolishly) that we can do whatever we wish because we have so many human-created backups. Always practice sustainable foraging. Never uproot plants if you're only eating the leaves! Don't overharvest. Only take what you need.

The more you forage, the more you'll realize that your best tool is your memory. You'll learn to recognize where the edible flowers grow, where the berry vines are, and the fields that will be full of chickweed next spring. And the more you know, the less you'll need to carry.

HOW MUCH WILD FOOD IS OUT THERE, ANYWAY?

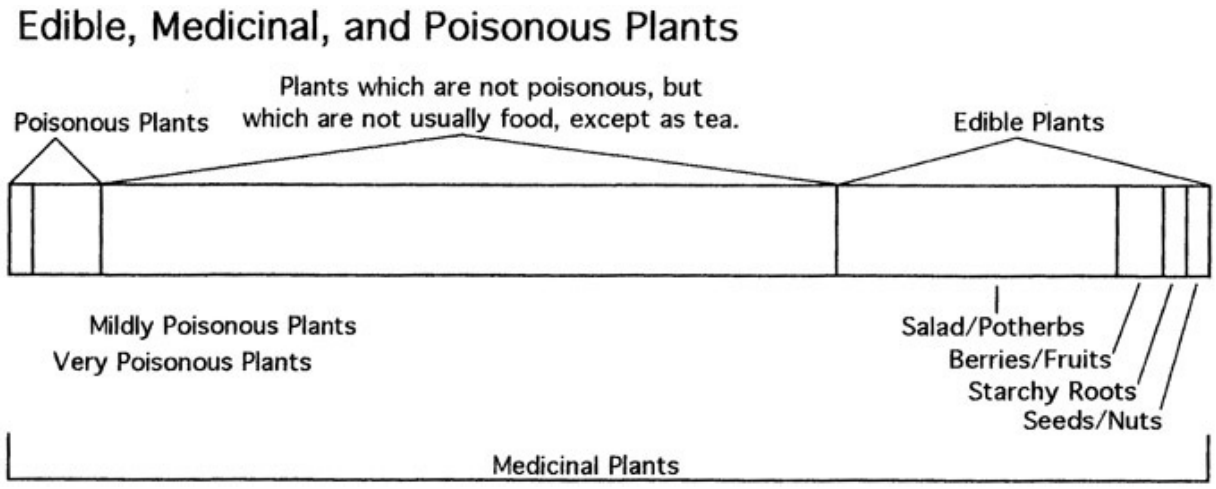
PLANTS EVERYWHERE, BUT NOT ALL CAN BE EATEN

In his book *Participating in Nature: Wilderness Survival and Primitive Living Skills*, Thomas Elpel has created a unique chart, based on years of observation and analysis, to give a perspective on the sheer numbers of edible, medicinal, and poisonous plants. The chart is reprinted with permission here. Elpel is also the author of *Botany in a Day*. Simply put, this is the way botany should be taught in the colleges. Elpel brings it alive in a way that is immediately applicable.

Almost every plant with known ethnobotanical uses can be used medicinally; even some otherwise toxic plants can be used medicinally if you know the right doses and proper application. So, yes, medicine is everywhere. But a large majority of these plants are neither poisonous nor used for food for various reasons.

The extremely poisonous plants that will outright kill you are rare. And because there are so few of these deadly plants, it is not all that difficult to learn to identify them. Here in Arizona, for example, we can find poison hemlock, which is fairly easy to learn to recognize. Others that could cause death are various mushrooms, oleander, and tree tobacco, though we rarely hear about that happening.

Though there are only a few that are deadly poisonous, there are many more—perhaps five times as many plants as the very deadly ones—that would make you very sick but would not normally kill you.



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Still, all the poisonous and toxic plants combined are a small minority of all the known ethnobotanicals.

Edible plants make up approximately a fifth of the known edible, medicinal, and poisonous plants.

Of the plants that we normally think of as “food plants,” the overwhelming majority primarily provides us with greens. That is, throughout most of the year, most of the food that you’ll obtain from the wild consists of greens: food to make salads and stir-fries and to add to soups and vegetable dishes. These are plants that by themselves will not create a filling and balanced meal, but they will add vitamins and minerals to your dried beans, MREs (meals ready to eat), freeze-dried camping food, and other foods. In general, greens are not high sources of protein, fats, or carbohydrates.

Berries and fruits make up another category of wild foods. A small percentage of the wild foods you find will provide you with berries or fruits —maybe 10 percent—and timing is everything. Unlike greens, which you can usually find year-round, fruits and berries are typically available only seasonally, so if you want some during other parts of the year, you’ll need to dry them or make jams or preserves. This includes blackberries, elderberries, toyon, mulberries, and many others. They provide sugar and flavor, but like greens, you would not make a meal entirely from fruits and berries.

Then, an even smaller category of wild foods consists of starchy roots, such as cattails, onions, or biscuitroot. These are great for energy, though

they may not be readily available year-round. Therefore, these foods have traditionally been dried, and even powdered, and stored for later use.

Another small category of wild foods consists of the seeds and nuts. This includes grass seeds, pine nuts, mesquite, screwbean, carob, acorns, and many others. It is in this small category where you obtain the carbohydrates, oils, and sometimes proteins that constitute the “staff of life.” Though these are not available all year, some have a longer harvest time than others. Some may have a harvest period as short as two weeks. Many grass seeds simply fall to the ground and are eaten by animals. Fortunately, most of these can be harvested in season and stored for later use.

ARE WILD FOODS NUTRITIOUS?

It is a common misconception that “wild foods” are neither nutritious nor tasty. Both these points are erroneous, as anyone who has actually taken the time to identify and use wild foods can testify. I’ve also had many new students who had been convinced about the nutritional value of wild foods but assumed that the plants nevertheless tasted bad. Of course, a bad cook can make even the best foods unpalatable.

My friends Pascal Baudar and Mia Wasilevich continue to use wild foods in their gourmet dishes and classes, and they have demonstrated to me that wild foods can be as flavorful as any foods in the finest restaurants.

For your edification, here is a chart extracted from *Composition of Foods*, by the U.S. Department of Agriculture, to give you an idea of the nutritional content of many common wild foods.

NUTRITIONAL COMPOSITION OF WILD FOODS

The data below are per 100 grams, unless otherwise indicated. Blanks denote no data available; dashes denote lack of data for a constituent believed to be present in measurable amounts. Only a select number of plants for which we had data are represented.

Plant	Calories	Protein (g)	Fat (g)	Calcium (mg)	Phosphorus (mg)	Iron (mg)	Sodium (mg)	Potassium (mg)	Vitamin A (IU)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Vit. C (mg)	Par
Amaranth	36	3.5	0.5	267	67	3.9	—	411	6,100	0.08	0.16	1.4	80	Lea
Carob		4.5		352	81	2.9	35	827	14		0.4	1.89	0.2	Pod
Cattail		8%	2%											Rhi
Chia		20.2%		631	860	7.72	16	407	54	0.62	0.17	8.8	1.6	See
CHICORY TRIBE														
Chicory	20	1.8	0.3	86	40	0.9	—	420	4,000	0.06	0.1	0.5	22	Lea
Dandelion	45	2.7	0.7	187	66	3.1	76	397	14,000	0.19	0.26	—	35	Lea
Sow thistle	20	2.4	0.3	93	35	3.1	—	—	2,185	0.7	0.12	0.4	5	Lea
Chickweed									30 mg	0.02	1.14	0.51	375	
Dock	28	2.1	0.3	66	41	1.6	5	338	12,900	0.09	0.22	0.5	119	Lea
Fennel	28	2.8	0.4	100	51	2.7	—	397	3,500	—	—	—	31	Lea
Filaree	—	2.5	—	—	—	—	—	—	7,000	—	—	—	—	Lea
Grass										300–500 IU	2,000 to 2,800 IU		300 to 700 mg	Lea
Lamb’s-quarter	43	4.2	0.8	309	72	1.2	43	452	11,600	0.16	0.44	1.2	80	Lea
Mallow	37	4.4	0.6	249	69	12.7	—	—	2,190	0.13	0.2	1.0	35	Lea
Milkweed	—	0.8	0.5	—		—	—	—	—	—	—	—	—	Lea
Miner’s lettuce						10% RDA			22% RDA				33% RDA	Lea
MUSTARD FAMILY														
Mustard	31	3	0.5	183	50	3	32	377	7,000	0.12	0.22	0.8	97	Lea
Shepherd’s purse	33	4.2	0.5	208	86	4.8	—	394	1,554	0.08	0.17	0.4	36	Lea
Watercress	19	2.2	0.3	120	60	0.2	41	330	3,191		0.12	0.2	43	Lea
Nettle	65	5.5	0.7	481	71	1.64	4	334	2,011	—	0.16	0.38	76	Lea
New Zealand spinach	19	2.2	0.3	58	46	2.6	159	795	4,300	0.04	0.17	0.6	30	Lea
Oak (acorn flour)	65% carbohydrates	6%	18%	43	103	1.21	0	712	51	0.1	0.1	2.3	0	Nut
ONION FAMILY														
Chives	28	1.8	0.3	69	44	1.7	—	250	5,800	0.08	0.13	0.5	56	Lea
Garlic	137	6.2	0.2	29	202	1.5	19	529	—	0.25	0.08	0.5	15	Clo raw
Onion	36	1.5	0.2	51	39	1	5	231	2,000	0.05	0.05	0.4	32	You leaf

Passion fruit (per pound)				31	151	3.8	66	831	1,650				71	Frui
Pinyon pine	635	12	60.5		604	5.2				1.28				Nut
Prickly pear	42	0.5	0.1	20	28	0.3	2	166	60	0.01	0.03	0.4	22	Frui
Purslane	21	30	1.7	0.4	103	39	3.5	—	—	2,500	0.03	0.1	0.5	Lea sten
Rose	162	1.6		169	61	1.06	4	429	4,345		0.16	1.3	426	Frui

Ferns

Ferns are flowerless plants with feathery or leafy fronds. They reproduce by spores contained in sporangia that appear as brown dots on the underside of the fronds. They are found throughout tropical to temperate regions, characterized by true roots produced from a rhizome. There are thirteen families of ferns.

BRACKEN FAMILY (DENNSTAEDTIACEA)

Among the ferns, the Bracken family contains about eleven genera and about 170 species. The Bracken family's only representative in Arizona is the bracken or brake fern.

BRACKEN

Pteridium aquilinum

Bracken leaf

Use: Young uncurling shoots used for food.
Range: Throughout the state, mostly in the shady areas of the mountains and canyons
Similarity to toxic species: See Cautions.

Best time: Spring
Status: Somewhat common in the correct terrain
Tools needed: Clippers

PROPERTIES

Bracken can apparently be found worldwide. Ours can be found throughout the state in pastures, hillsides, wooded areas, and even full sun. You'll find it most commonly on the north, shady side of hillsides or shady hillsides where water seeps and little sun gets through the canopy of whatever larger trees grow there.

The rhizomes are hairy and sprawling underground, sometimes branching. The black petiole near the base has dense brown hairs. The plants grow 1' to 4' tall, and the overall appearance of each frond is roughly triangular; each is twice-pinnately divided.

Bracken fiddlehead BARBARA KOLANDER

USES

The young shoots are the edible portion, and they have the appearance of the head of a fiddle, which is where the common name “fiddlehead” comes from. The young shoots will uncurl and grow into the full fern fronds. These are picked when young and can be eaten raw or cooked. I like to toss a few fiddleheads in salads when they are in season; they impart a nutty flavor.

More commonly, fiddleheads are boiled or steamed and served with butter or cheese. They are easy to recognize and have gained a resurgence of popularity as more people are rediscovering wild foods. Bracken is also a

good vegetable to add to soups and stews and mixed dishes. Just carefully pinch off the tender, unfolding top, and you can gently rub off the hair. Use as a nibble or cook it.

Do not eat the fully opened ferns.

CAUTIONS

Researchers have identified a substance called ptaquiloside in bracken fern, a known carcinogen. So, is it safe to eat? It has been a food staple of Native Americans for centuries, if not millennia, and the Japanese also enjoy bracken and consider it one of the delicacies of spring. Although actual scientific data are inconclusive, there is a higher rate of intestinal cancer among Native Americans and Japanese, and this could be linked to the use of bracken fern. Livestock has been known to be mildly poisoned by eating quantities of the raw bracken ferns. Cooking is known to remove some of the toxins, though not necessarily the ptaquiloside.

Despite this, there are many who are not so concerned about such inconclusive studies. For example, Steven Brill, in his book *Identifying and Harvesting Edible and Medicinal Plants in Wild (and Not So Wild) Places*, states, “I wouldn’t be afraid of eating reasonable quantities of wild [bracken] fiddleheads during their short season.” Green Deane, another forager from Florida, writes, “I am willing to risk a few fiddleheads with butter once or twice a spring, which is about as often as I can collect enough in this warm place.”

A small fiddlehead RICK ADAMS

The final choice is up to you. For perspective, we regularly hear things far worse than the above about coffee, high-fructose corn syrup, sugar, and french fries, yet people seem to have no problem purchasing and eating these substances. That doesn’t make them good for you, but eating some in moderation is not likely to be the sole cause of cancer or other illness.

Gymnosperms

This is a class of plants whose naked seeds are formed in cones (as with a pine tree) or on stalks (as with *Ephedra*). The members of this group include the cycadophytes, conifers, ginkgo, and ephedras.

EPHEDRA FAMILY (EPHEDRACEAE)

The Ephedra family consists of only one genus, *Ephedra*, with about fifty species worldwide. Ten of the *Ephedra* species are found in Arizona.

MORMON TEA

Ephedra spp.

***Ephedra* stems and little cones** RICK ADAMS

Use: Beverage
Range: The desert and grassland areas
Similarity to toxic species: None, but be careful. Mormon tea looks like leafless sticks. Be attentive. While we aren't aware of a toxic look-alike,

there very well could be a toxic plant that has lost its leaves and therefore resembles Mormon tea.
Best time: Year-round
Status: Relatively widespread
Tools needed: Clippers

PROPERTIES

Mormon tea grows in the desert, often in the driest soils where there are few other plants growing. It grows in sand drifts and in sand flats, amid the creosote and the mesquite. It's a real survivor.

***Ephedra* cones** RICK ADAMS

And when most folks look at this very unassuming plant that rises only 1' to 2' out of the ground, they think they're looking at some sticks of a dead plant. But the plant *is* all sticks! It's a gymnosperm, which makes it akin to the pine trees and conifers. The plant produces tiny little cones, which actually flower, but you have to look closely—and at the right time—to see them. You'll see one to five of these cones per node.

There are ten species of *Ephedra* in Arizona, and frankly, after you've seen one *Ephedra*, you'll recognize them all, even though there is some

variety between the nuances of color, the overall size, and the way the “sticks” grow. A Mormon tea aficionado will easily see those differences, but to the average person passing through, they are all very similar in appearance.

USES

Often when camping out in the low desert where the Mormon tea is ubiquitous, we cut a handful of the stems and brewed them in a kettle over the fire. It’s best when the kettle is covered so you don’t boil away all the flavor. The resultant tea has a slight pinkish color and a subtle flavor. It can be compared to a mild green tea, though without any strong stimulants. It makes a good evening beverage, which I prefer unsweetened so I can taste its subtle flavor. For those who prefer sweetened teas, just a half teaspoon of honey is sufficient.

The name of this plant came from early Mormon settlers who drank a tea from this plant because they scrupulously avoided stimulating drinks like coffee or tea. But it turns out that Mormon tea may make you feel slightly stimulated. Moreover, for generations before that, the indigenous people of the desert also made a drink from this unassuming plant. Our desert species contains pseudoephedrine, a much weaker form of ephedrine found in species of *Ephedra* in China and elsewhere. According to Dr. James Adams, *Ephedra* plants contain pseudoephedrine, “which is a good nasal decongestant and a mild stimulant.”

Christopher examines an *Ephedra* patch. RICK ADAMS

I always liked the aroma of the tea, which reminds me of the desert. Plus, if you drink it from a glass, you can observe the tea's subtle, pink color.

At home, I just put a small handful of the twigs into a stainless-steel pot, add about two cups of water, cover, and boil. I let it cook for about five minutes and turn off the heat. I pour the water into my cup, sometimes drinking it to alleviate some allergies or minor breathing problems. Though I enjoy the subtle flavor of just the Mormon tea, sometimes I will sweeten it with honey, sometimes with date sugar.

PINE FAMILY (PINACEAE)

The Pine family is said to supply about half the world's lumber needs. The family consists of ten genera and 193 species.

PINE

Pinus spp.

Pinyon pine needles

Use: Needles for tea and spice; nuts for food
Range: Various species are found in the mountains or desert regions; often planted in urban areas.
Similarity to toxic species: None

Best time: Nuts in the fall; needles can be collected anytime.
Status: Common in certain localities
Tools needed: Clippers for needles

PROPERTIES

Pines are fairly widespread trees, most commonly found in the higher elevations but also throughout the desert regions (such as the pinyon pine). There are ten species of *Pinus* in Arizona (ninety-four species in the Northern Hemisphere).

Pine nuts on a stone, ready to be shelled

Pines are one of the easier conifers to identify: All the needles are "bundled" at their base into groups of one to five with papery sheaths called fascicles. And you will find the fascicle at the base of the needle even when there is only one needle, as in one of the pinyons.

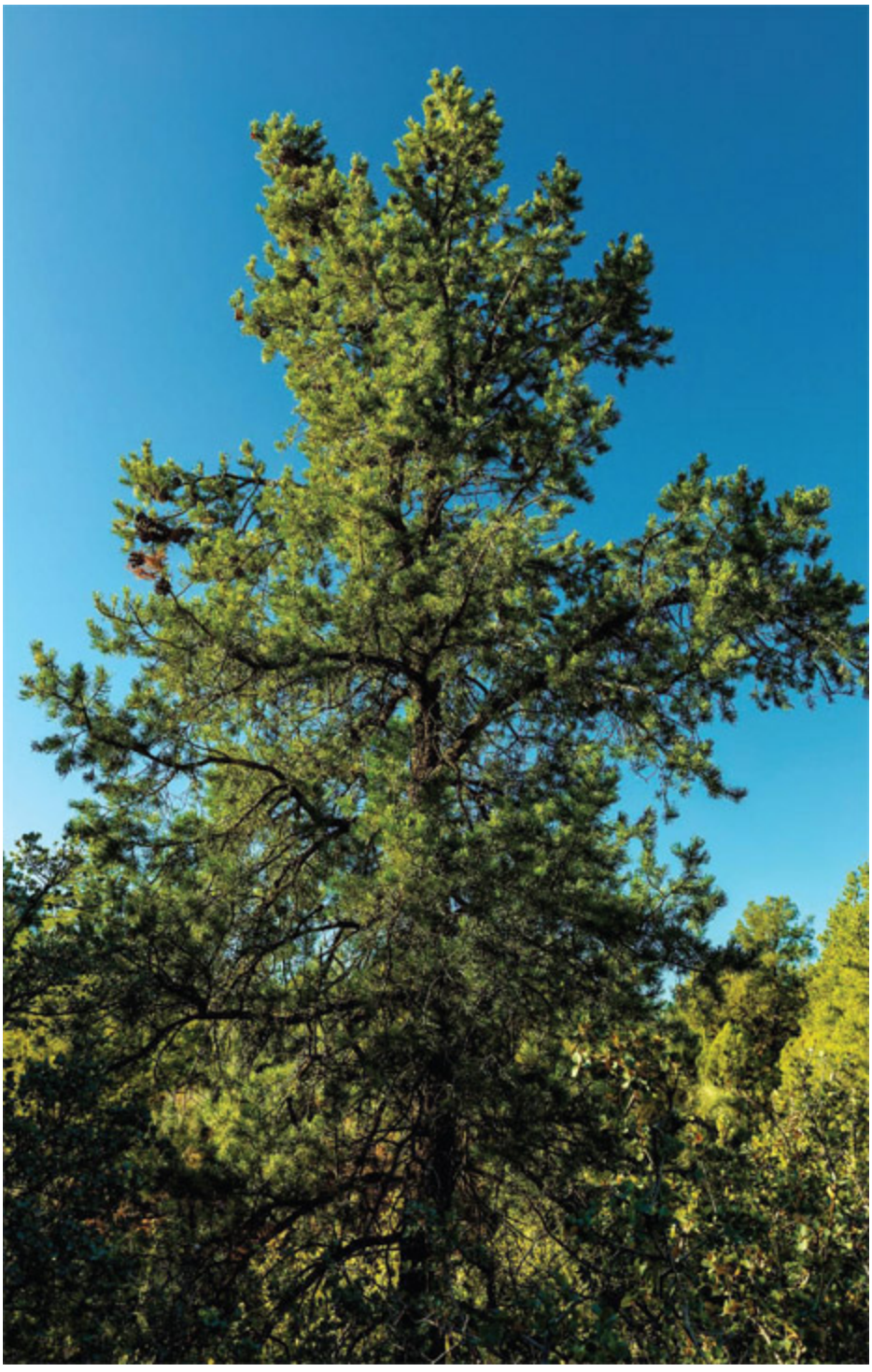
The pines in Arizona can range from short bushes to large towering trees. To identify a pine tree, look for the bundled needles and for the cones. The cones are often whorled with a variety of scale types. As the cones mature, they open up to reveal a pine nut under each scale. Each pine nut has a thin, black shell and the white, oily inside.

USES

Though there are a few potential foods with the pines, it is mostly the seeds that will provide you with a good food. The pinyon pines are arguably the best, and some of the other species have cones that yield flat seeds, or seeds too small to bother with.

> FORAGER NOTE: Some of the very long needles of certain pines are excellent for coiled baskets.

The cones mature and open in the fall. As the scales open sufficiently, the seeds drop to the ground, where they can be collected if you're there at the right time and beat the animals to them. The seeds may drop over a two- to four-week period. One of the best methods to harvest them is to lay sheets under the trees to catch the seed so they're not lost in the grass. The seeds are then shelled, eaten as a snack, added to soups, or mashed and added to biscuits or pancakes.



A view of the pinyon pine BOB SHUMAN

As some suggest, I have taken the not-fully-mature cones and put them into the fire and carefully watched so they don’t burn. The idea is to open the scales and then get the seeds; however, I do not recommend this

method. It’s too easy to burn the cone, the seeds, and maybe yourself for seeds that are not really mature.

The tender needles can also be collected and brewed into a tea. Put the needles in a covered container and boil at a low temperature for a few minutes. The tea is rich in vitamin C and very aromatic and tasty—that is, if you enjoy the flavor of a Christmas tree, which is what you’ll smell like after drinking it. It’s very good.

Yes, we have all heard of eating the cambium layer of pine trees. I once read an article entitled “Spaghetti That Grows on Trees,” and it showed a woman who had peeled off the cambium layer of the bark (the inner layer) and had supposedly cooked strips of it to make a wild spaghetti. She was actually smiling in the picture, which was my clue that she hadn’t actually eaten any of this “spaghetti.” I regard this as a “survival food,” meaning it is really not worth all the work involved unless you’re actually near starving. You most likely would not break into a smile if you were eating such a fibrous and resinous food.

JUNIPER

Juniperus californica

Juniper in fruit HELEN SWEANEY

Juniper is a member of the Cypress family (*Cupressaceae*), which has thirty genera and more than 130 species worldwide.

There are about sixty-seven species of *Juniperus* in the Northern Hemisphere. In Arizona, we have just seven species of juniper, all of which are considered native, including the Utah juniper (*J. osteosperma*).

Use: Berries used for food and medicine.
Range: Dry hills, plains, pinyon-juniper woodlands, canyons; different species are found from about 3,000-foot elevation up to the timberline.
Similarity to toxic species: None
Best time: Berries collected from May through July.
Status: Common in certain localities
Tools needed: A bag

PROPERTIES

Junipers are shrubs or small trees with thin, peeling bark. The leaves are scalelike. The seed cone is five to eighteen millimeters long, more or less

round, fleshy, berrylike, and a shade of blue that matures to brown. The aroma of the cones has been described as “gin-like.”

A view of the fruit and leaf of the juniper KHANGI

Sometimes junipers are confused with cypress, but the cypress have larger, harder cones with angular edges.

Juniper in fruit

USES

Wild food researcher Helen Sweaney did a lot of experimentation with the juniper berries to test edibility. Some of her experiments yielded barely palatable flours made from the seeds. However, she indicated that the berries are not only edible but delicious, if your timing is right. For example, in the various desert areas where she collected, berries were edible in May in one area, and yet, maybe fifty miles to the east, she found that the berries were good near the end of June and into July.

Indigenous peoples took the fresh juniper berries and boiled them before eating. They would also take berries that were fully ripe and dry and remove the seeds. The pulp was then ground in a mortar and eaten raw. I've read this was "said to taste sweet," though I have yet to taste any that fit my definition of "sweet." The juniper berries were perhaps mixed with other berries to improve the flavor.

Roman inspects some of the ripening juniper fruits.

MEDICINAL TEA

Linda Bishop, an ethnobotanist and faculty member at Sitting Bull College, makes a great medicinal tea from the juniper berries. She first heats juniper berries in one to two cups of filtered water for five to ten minutes, in a covered pot. Then she adds one teaspoon of fresh lemon juice and one teaspoon of raw honey. According to Bishop, "when the mucus in your nose, sinuses, throat, and lungs feels thicker than pea

soup and as immovable as cement, you need some type of expectorant to thin the mucus so that you can cough it up or blow it out." This tea is good for that purpose.

Mostly, however, the juniper berries were ground into flour and then made into bread or mush. This was how the Cahuilla people (whose territory extended from the Mohave Desert east to the Sonoran Desert) used the berries. Some berries were dried in the sun for approximately a week, for later use. Berries with seeds removed were ground and then sifted to obtain finer flour. The flour was sometimes mixed with water to form small cakes and then dried. Apparently, when these cakes were dried on a base of the leaves of a native member of the Pea family, Spanish clover (formerly *Lotus purshianus*, now *Acmispon americanus*) for up to a week, it was said the flavor of the cakes improved. According to some ethnographic reports, the majority of the juniper consumed was in the form of these dried cakes.

Among the Diegueño (also known as the Kumeyaay, who resided in southern San Diego County, adjacent to Arizona), the fruit was used but considered a "starvation food," meaning they didn't care much for it unless there was absolutely nothing else to eat. Try it yourself, and you may understand why.

Some Native groups enjoyed cakes made from the juniper berries, which was used for both food and medicine. One report spoke of "sweet delicious loaves from the juniper berries." The exact recipe or process to produce such a "delicious" cake has apparently been lost.

I have found that if I feel the onset of a cold or flu, chewing on a few of the juniper berries can help bring my body back to "normalcy."

Juniper in fruit

Eudicots

This category was formerly the bulk of the plants referred to as dicots, that is, plants that begin their growth with two cotyledons. (Monocots, by contrast, which includes all grasses, begin their growth with one single cotyledon.)

The sprouts begin with two cotyledons and the flower parts generally in fours or fives.

All families in this category are arranged alphabetically by the family's Latin name.

MUSKROOT FAMILY (ADOXACEAE)

This family has five genera and about 200 species worldwide.

ELDERBERRY

Sambucus spp.

Elder flower and fruit HELEN W. NYERGES

Use: Flowers for tea and food; berries for “raisins,” jam, jelly, juice
Range: Elder can be found throughout the state in mountains, desert, urban fringes, and in moist coniferous forests and meadows.
Similarity to toxic species: See Cautions.
Best time: Early spring for flowers; early summer for fruit

Status: Common
Tools needed: Clipper for flowers; clippers and good sturdy basket or bucket for berries

FORAGER NOTE: If you don't want your fruit to get all smashed and crushed, collect in a basket or bucket (instead of a bag), and don't pack too many into the bucket.

David Martinez examines ripe elder fruit.

PROPERTIES

There are twenty species of *Sambucus* worldwide.

In Arizona, you'll find two species of elder. These are "Blueberry elder," *Sambucus nigra* ssp. cerulean, which was formerly known as *S. glauca*. This one is found in the higher elevations, from 6,500 to 9,500 feet.

“Mexican elder” is also *Sambucus nigra*, subspecies of *canadensis*. This was formerly known as *S. Mexicana*, and this one is found in the lower elevations, from about 1,000 to 4,000 feet. The second species is “red-berried elder,” *Sambucus racemosa* var. *racemosa*, formerly known as *S. microbotrys*. This one is found at higher elevations, above 7,500 feet, and its berries are bright red.

Elder can be found in the dry desert regions of Arizona, along streams, and in the higher mountain regions. They are generally small trees, with oppositely arranged, pinnately divided leaves with a terminal leaflet. Each leaflet has a fine serration along its edge.

The plant is often inconspicuous in the fall and winter when it is dormant but very obvious when its many yellowish-white flower clusters blossom in the spring.

By early summer, the fruits develop in clusters that often droop from the weight.

USES

The dark purple berries, rich in vitamin A with fair amounts of potassium and calcium, can be eaten raw (but see Cautions below), or mashed and blended with applesauce for a unique dessert, especially if you are using wild apples. The berries can also be used for making wines, jellies, jams, and pies. (The red berries are not recommended for food, with some having toxic qualities.)

Elder leaf and flowers

Fellow forager and wild-food experimenter Pascal Baudar likes to dry and powder the fruit and sprinkle it over ice cream and other dessert items.

The whole flower cluster can be gathered, dipped in batter, and fried, producing a wholesome pancake. Try dipping the flower clusters in a batter of the sweet yellow cattail pollen (see Cattail) and frying it like pancakes. It’s delicious!

Another way to use the flowers is to remove them from the clusters and the little stems, and then mix with flour in a proportion of fifty-fifty for baking pastries, breads, biscuits, and more.

The flowers also make a traditional Appalachian tea that was said to be useful for colds, fevers, and headaches.

The long, straight stems of elder have a soft pith and have historically been hollowed-out and used for such things as pipe stems, blowguns, flutes, and straws for stoking a fire.

CAUTIONS

Be sure to cook the fruit before eating it, and avoid the red berries entirely. While not everyone will get sick from eating the dark purple or black berries raw, they can cause severe nausea in some people. Therefore, cook all fruit before using for drinks or other dishes.

Do not consume the leaves, as this will result in sickness.

RECIPE

Elder Flower Vinegar

Fill a jar with elder flowers (remove as much of the green stems as you can), then pour in apple cider vinegar or rice vinegar until you reach the top. Close the lid tightly and shake a couple of times daily. Taste after a couple of weeks. Makes a wonderful vinegar with floral flavors.

—RECIPE FROM PASCAL BAUDAR

RECIPE

Elderberry Sauce

This simple sauce goes well with any game (such as duck), but feel free to try it with chicken too!

1 pound elderberries (freeze the clusters first, crush them lightly with your hands, and the berries will fall easily)

1 large sweet onion or 7–8 scallions

⅔ cup red wine vinegar

¾ cup sugar or honey

1 teaspoon grated ginger

A couple of cloves

½ teaspoon of salt, or to taste

Place the berries in a pot and squeeze them with your hand first to release the juice. Add the remaining ingredients and bring to a boil for ten minutes. Strain the liquid through a sieve.

Return the liquid to the pot, bring to a simmer, and reduce until you have achieved the right consistency (like a commercial steak sauce). You can prepare it in advance and keep it in the fridge for many days.

—RECIPE FROM PASCAL BAUDAR

AMARANTH FAMILY (AMARANTHACEAE)

The Amaranth family has seventy-five genera and 900 species worldwide.

AMARANTH

Amaranthus spp.

One of the erect amaranths

Oscar Duardo with one of the erect amaranth plants grown at his community garden

Use: Seeds for soup or pastry and bread products; leaf can be used raw or cooked.
Range: Amaranth is widespread. Though it is most common in the disturbed soils of farms, gardens, fields, and urban lots, you can usually find some amaranth in the deserts and in open areas where there is some moisture, even if that moisture is seasonal.
Similarity to toxic species: Some ornamentals resemble amaranth. Some toxic plants superficially resemble the amaranth plants. Individual jimsonweed leaves have been confused for amaranth leaves. Generally, once the amaranth begins to flower and go to seed, this confusion is diminished.
Best time: Spring is best for the leaves; late fall for the seeds.
Status: Common
Tools needed: You'll need a tight-weave bag for collecting the seeds.

PROPERTIES

At least six species of *Amaranthus* have been noted in Arizona.

Amaranth is an annual. The ones with erect stalks can grow to three feet and taller, depending on the species. Some are more branched and lower to the ground. *Amaranthus* leaves can be ovate to linear.

When young, the root of one of the common species, *A. retroflexus*, is red, and the bottoms of the leaves are purple. The leaves of *A. retroflexus* are oval-shaped, alternate, and glossy.

The plant produces flowers, but they are not conspicuous. They are formed in spikelike clusters, and numerous shiny, black seeds develop when the plant

David Martinez shows one of the erect amaranths grown for grain.

***A. retroflexus*. Note the red root.** RICK ADAMS

One of the ornamental, erect amaranths

matures in late summer. The plant is common and widespread in urban areas, fields, farms, backyards, and roadsides.

USES

Amaranth is a versatile plant with edible parts available throughout its growing season.

The young leaves and tender stems of late winter and spring can be eaten raw in salads, but because there is often a hint of bitterness, they are best mixed with other greens. Young and tender stems are boiled in many parts of the world and served with butter or cheese as a simple vegetable.

Older leaves get bitter and should be boiled into a spinachlike dish or added to dishes like soups, stews, and stir-fries.

In Mexico, leaves are sometimes dried and made into a flour, which is added to tamales and other dishes.

FORAGER NOTE: Amaranths are a diverse group: Some have an erect stalk, some are highly branched, and some are prostrate.

Amaranth begins to produce seeds in late summer, and once the seeds are black, they can be harvested. The entire plant generally is very withered and dried-up by the time you're harvesting. The seeds are added to soups, bread batter, and pastry products. Ground-up seeds sweetened with honey are used to make a traditional Mexican atole.

The author with a grain amaranth, on the grounds of the Smithsonian's National Museum of the American Indian in Washington HELEN W. NYERGES

The seed and leaf are very nutritious, no doubt part of the reason this plant was so revered in the old days. Consider this: 100 g of the seed contains about 358 calories, 247 mg of calcium, 500 mg of phosphorus, and 52.5 mg of potassium. The seed offers a nearly complete balance of essential amino acids, including lysine and methionine.

The leaf is also very nutritious, being high in calcium and potassium: 100 g, about a half cup, of amaranth leaf has 267 to 448 mg of calcium, 411 to 617 mg of potassium, 53 to 80 mg of vitamin C, 4,300 mcg (micrograms) of beta-carotene, and 1,300 mcg of niacin. This volume of leaf contains about 35 calories.

Historical note: The seed and leaf of this plant played a key part of the diet in pre-colonial Mexico. The seeds were mixed with honey or blood and shaped into images of their gods, and these images were then eaten as a communion. Sound familiar? After the Spanish invaded Mexico, they made it illegal to grow the amaranth plant, with the justification that it was a part of "pagan rituals."

CARROT FAMILY (APIACEAE)

The Carrot family has about 300 genera worldwide, with about 3,000 species. Many are cultivated for food, spice, and medicine, but some are highly toxic. Never eat anything that looks like carrot or parsley if you haven't positively identified it.

BISCUIT-ROOT

Lomatium spp.

A view of the biscuitroot plant MARY WINTER

There are about seventy-five species of *Lomatium* worldwide, and nine are found in Arizona.

Use: All parts of the plant are edible, though the roots are most commonly eaten. Some species are unpalatable.
Range: Widespread; can be found up into Canada and west to California.
Similarity to toxic species: See Cautions.
Best time: The most responsible and rewarding time to gather roots is when the plants have developed mature seed (sometimes as early as March or April). But since the aboveground parts of the plant desiccate and vanish early in the summer, the optimal harvest window is brief. Plants harvested in the late flowering stage may have accumulated enough carbohydrates to be worthwhile.
Status: Widespread; found in seasonally arid habitats, on ridgetops, open slopes, lava flats, and in open meadows.
Tools needed: A sharpened stick, or steel pry bar, is a more effective and less destructive harvesting tool than a trowel (these plants lodge themselves in very stony soils). Gloves prevent many scraped knuckles.

PROPERTIES

These plants have a taproot that is usually short and tuberous-thickened, irregularly shaped, and occasionally slender and elongate. The stems tend to be prostrate and creeping, rarely arising above knee-height. Leaves are typically pinnately dissected (or alternately dissected), with the individual leaflets being threadlike to wide. Leaves are usually all basal, but there might be one or more cauline leaves. Different species can have white, yellow, or purple flowers. The inflorescence is a compound umbel, which matures into seeds with flattened backs and wings.

With a bit of fieldwork, you'll be able to recognize a *Lomatium*, though it may take a bit longer to learn to recognize the different species.

USES

Lomatium is a diverse genus. The roots, young flower stalks, and leaves vary in palatability, according to species. The less palatable species, like *L. dissectum*, have powerful medicinal uses. Indigenous harvesters have focused on a few species that have either large, pleasantly flavored roots or tender stems (often called "Indian celery"). Many *Lomatium* species have slender roots and are strongly parsley flavored.

While the root may be eaten raw, cooking improves appeal. Biscuit-root is a versatile staple, appreciated by diverse indigenous cultures. There are

innumerable traditional processing methods and recipes. Biscuit-root can be boiled, mashed, roasted, or fried, like potatoes or parsnips. Biscuit-root is particularly amenable to drying, with or without peeling, whole or mashed into cakes. Dried roots can be crushed into a flour, which can be reconstituted into dough, and shaped to form dried “pinch cakes” that may include other dry ingredients. Boiling and blending with fat was a popular way of serving fresh or dried biscuit-root.Peeling with the thumbnail can be made easier by rubbing or gently knocking a sackful of roots against a hard surface.

Lomatiums are perennial plants, which require years to grow to a harvestable size. They are culturally vital and still harvested by Native people. Respectful harvest of biscuit-root keeps in mind their locally fragile but geographically extensive nature. Digging disturbance may perpetuate certain native foods, particularly where sod competes, but always leave the majority of plants to seed future abundance. Sampling sensitive indigenous foods is most appropriate in educational contexts, which instills an appreciation for Native cultures and ecologies. Such sampling needs to be occasional and limited, to keep populations healthy. Weedy biennial root vegetables, abundant in places disturbed by the colonizing civilization, provide ample daily fare for modern foragers.

A view of the root of the biscuitroot MARY WINTER

The staple species used by native groups (*L. canbyi*, *L. cous*) have a mild flavor, similar to parsnips. Other species have a harsh aromatic flavor reminiscent of strong parsley or even kerosene. Drying and/or boiling may ameliorate harsh flavors. The parsley-like flavor can be difficult to complement in dishes but blends superbly with mustard. The tender young "celery" stems of taller species (*L. nudicaule*, *L. triternatum*) were relished among the earliest fresh vegetables of spring. The leaves are some of the earliest to sprout in sagebrush country. They can be used like parsley for a garnish, raw or cooked.

The papery seeds are best if collected before the plant begins to dry up. These can be added to other foods as a spice. Seeds from more aromatic species were used similar to mothballs and traded as a commodity.

CAUTIONS

Because the deadly poison hemlock and water hemlock are in this same family, with the same floral structure, you must be absolutely certain you

are correctly identifying biscuit-root if you intend to eat it. There are several significant differences between biscuit-root and poison hemlock. Poison hemlock can grow to seven feet tall, with luxuriant leaves and stout stems blotched with purple as the plant matures. Unlike moisture-loving hemlocks, biscuit-root species grow in soils subject to extremes of aridity and exposure. Biscuit-roots are compact plants, often ubiquitous in upland habitats, and very distinctive in their hardy adaptation. The differences between these plants become comfortably clear with familiarity.

WILD CARROT

Daucus carota

A patch of wild carrots

There are about twenty species of *Daucus* worldwide, and two are found in Arizona.

Use: The roots can be dug and used like farm-grown carrots, but they are tougher. Seeds are sometimes used as a spice.
Range: Not a native but can be found scattered throughout Arizona, often in disturbed or poor soils and along roadsides.
Similarity to toxic species: See Cautions. **Best time:** For a more tender root, dig before the plant flowers.
Status: Found sporadically throughout Arizona.
Tools needed: Shovel or trowel

A patch of wild carrots ALGIE AU

PROPERTIES

If you've ever grown carrots in your garden, you will recognize the wild carrot in the wild, except it will typically be smaller. Smell the crushed leaf and scrape a bit of the root and smell it. Does it smell like carrot? The root of the wild carrot is white, not orange, and if you scratch it, you'll get that very characteristic carrot aroma.

The leaves are pinnately dissected, with the leaflet segments linear to lanceo-late—just like the leaves of a garden carrot. The flowers are formed

in umbels of white flowers, with a tiny central flower that is purple. As the umbel matures, it closes up and has the appearance of a bird’s nest.

USES

The roots can be dug, washed, and eaten like garden carrots, though they are usually tough. This was one of the first wild foods that I learned to use. It was always a feeling of great mystery and pleasure to dig into a wild field and pull up one of these white roots. Was it a farm carrot gone feral? Probably. It still woke up some inner distant memory of “hunter-gatherer.”

Sometimes, I simply peel the outer part of the taproot and discard the very tough inner core. I then wash the outer layer of the root, chop or slice it, and add it to raw or cooked foods.

The entire root might be tender if it’s growing in moist and rich soil. In this case, it can be sliced thin and added to salads. These roots are probably best added to soups, stews, and various cooked dishes.

The whitish root of the wild carrot ALGIE AU

But most of the roots I've found are pretty tough, and only the outer layer can be eaten. I slice this thin and cook it. It adds a good flavor to soups, though it lacks the carotene of commercial carrots.

The seeds of the mature plant can be collected and used as a seasoning, to taste.

CAUTIONS

The Carrot family contains some very good food and spices. However, make absolutely certain that you have a carrot and not poison hemlock, which are both members of this family. The wild carrot plant has a very

distinctive carrot aroma and has fine hairs on the stalk. Poison hemlock lacks the hairs, and usually, you will see mottled purple markings on the stem.

FORAGER NOTE: When young, poison hemlock resembles Italian parsley and looks very much like the wild carrot as it grows taller. If uncertain, here are some tips: Rub a leaf and smell the aroma. Does it smell like carrot? Then it probably is. Does it smell musky, like dust or old socks? It’s probably poison hemlock. Look at the mature stalk. If you see purple blotches, you have poison hemlock. Look at the flower umbel. Is there a single purple flower in the middle? If so, you have a wild carrot. Remember, never eat any wild plant until you have positively identified it.

SUNFLOWER FAMILY (ASTERACEAE)

Worldwide, the Sunflower family has about 1,500 genera and about 23,000 species! This is one of the largest botanical families in Arizona. Botanists divide this very large family into fourteen groups. All plants addressed here from the Sunflower family are within Group 8, described as having ligulate heads, five-lobed ligules (five teeth per petal), and generally containing milky sap when broken. My teacher described this group as the Chicory Tribe, a much more descriptive title than the unimaginative “Group 8” used today. According to Dr. Leonid Enari, the Chicory Tribe contains no poisonous members and is a worthy group for further edibility research. I have eaten many of the other members of this group not listed here, though generally, they require extensive boiling and water changing to render them edible and palatable.

CHICORY

Cichorium intybus

A view of chicory plants in a field RICK ADAMS

Use: Root for beverage and food; greens raw or cooked
Range: Widespread, found especially in the disturbed soils of farms, fields, gardens.
Similarity to toxic species: None
Best time: Spring is ideal for collecting.
Status: Common locally
Tools needed: Tool for digging roots

PROPERTIES

There are six species worldwide in the *Cichorium* genus. Chicory is the only wild species of *Cichorium* in Arizona.

The chicory plant grows upright three to five feet tall, typically with prominent sky-blue flowers. Look carefully at the flower—the tip of each petal is divided into five teeth, typical of the Chicory Tribe of the Sunflower

family. Each leaf will produce a bit of milky sap when cut. The older upper leaves on the stalk very characteristically clasp the stem at the base. This is a perennial from Europe that is now common in some parts of Arizona, in areas below 7,000 feet. It is found in fields, along roadsides, in gardens, in farms, and in disturbed soils.

The chicory flower. Note the five “teeth” at the tip of each petal. RICK ADAMS

A view of the chicory leaf. RICK ADAMS

USES

This is another of those incredibly nutritious plants with multiple uses. The leaves, preferably the very young leaves, can be added to salads; if you don’t mind a bit of bitter, the older leaves can be added. The leaves can be cooked similar to spinach and added to a variety of dishes, such as soups, stews, and egg dishes.

Chicory roots are also used whole or sliced, either boiled and buttered or added to stews and soups. Roots in rich soil tend to be less woody and fibrous.

Chicory roots have long been used as a substitute for coffee or as a coffee extender. Dig and wash the roots, and then dry them, grind them, and roast them until they are brown. Now use alone, just as you’d use regular coffee grounds, or add to coffee as an extender.

Incidentally, you can make this same coffee substitute or extender with the roots of dandelion and sow thistle.

Note: The entire Chicory Tribe of the Sunflower family contains no poisonous members, though many are bitter. These are generally tender-leafed plants with milky sap and with dandelion-like flowers, each petal of which usually has five teeth at the tip.

PRICKLY LETTUCE

Lactuca serriola and others

Prickly lettuce with erect stalk (Note sow thistle on the right.)

Use: Young leaves raw or cooked
Range: Most commonly found in gardens, disturbed soils, along trails, edges of farms.
Similarity to toxic species: None
Best time: Early spring
Status: Widespread
Tools needed: None

PROPERTIES

There are about one hundred species of *Lactuca* worldwide, and seven species are found in Arizona. *L. serriola*, a European native, is probably the most abundant and widespread.

Prickly lettuce is actually a very common annual plant that you can find just about anywhere, hidden in plain view. Yes, you've seen it, but it likely blended into the landscape. It's mostly an urban "weed," though occasionally, you'll find it in the near wilderness surrounding urban areas. It's originally from Europe.

Young rosette of prickly lettuce. These young leaves are still okay in salads.

Prickly lettuce rises with its erect stalk to generally no more than three feet. The young leaves are lanceolate with generally rounded ends. They are tender; if you tear a leaf, you'll see white sap. The plant grows upright with a straight stem that develops soft spines as it gets older. As the plant matures, you'll note that there is a stiff line of hairs on the bottom midrib of the leaf. The leaf attachment is either sessile or clasping the stem. And the leaf shape can be quite variable, from a simple oblong lanceolate leaf to one that is divided into pinnately lobed segments. Despite this, after you've seen a few prickly lettuce plants, you should readily recognize it.

FORAGER NOTE: One of the common names for this plant is compass plant. When the plant is mature, the edges of the

leaves tend to point to the sun as it moves across the sky. This is probably a mechanism to stop water loss. While this is by no means as accurate as using a compass, it could generally help you determine directions with a bit of figuring.

The flowers are small and dandelion-like, pale yellow, with about a dozen ray flowers per head. As with dandelion, these mature into small seeds attached to a little cottony tuft.

USES

Prickly lettuce sounds like something you'd really enjoy in a salad, but in fact, you need to find the very youngest leaves for salad, or they get too tough and bitter. Very young leaves (before the plant has sent up its flower stalk) are good added to your salads and sandwiches.

The leaves can also be collected and mixed into stir-fries or added to soups and any sort of stew in which you can add wild greens.

But let's not be fooled by the name "lettuce." Yes, it's botanically a relative of the cultivar you buy in the supermarket, but the leaves are significantly bitter as they age. And the rib on the underside of each older leaf develops these stiff spines that make any similarity to lettuce very distant. This means you'll be using this plant raw only when it's very young; and when it's flowering and mature, you probably won't be using it at all.

Still, it's food, it's edible, and it grows everywhere. You should get to know this plant and its relatives and learn to recognize it early in the growing season.

I've used it when very young in sandwiches, salads, soups, stews, and egg dishes. I've even used the small root when I was experimenting with coffee substitutes. Because this is related to dandelion and sow thistle, I figured it would work well as a coffee substitute, and it does, but there's very little root to this plant.

SOW THISTLE

Sonchus oleraceus and *S. asper*

A sow thistle in flower

Sow thistle in flower

FORAGER NOTE: Sow thistle is one of our most common wild foods. It is so widespread that it can be found in nearly every environment, even in the cracks of the urban sidewalks.

Use: Mostly the leaves, raw or cooked; root can be cooked and eaten; flower buds pickled.
Range: Most common in urban areas, gardens, and farms but also found in most environments.
Similarity to toxic species: None
Best time: Spring is best, though the older leaves of late summer are still useful.
Status: Common
Tools needed: Trowel for digging

PROPERTIES

There are fifty-five known species of *Sonchus* worldwide. Two of these species are found in Arizona, originally from Europe. Though the common sow thistle (*S. oleraceus*) is most often used for food, the other one looks very similar and can be used likewise. However, when you see *S. asper*, the prickly sow thistle, you may conclude that it's too much work to use for a dish of cooked greens because it is covered with soft spines.

A bee collecting sow thistle nectar.

When most people see a flowering common sow thistle for the first time, they think it's a dandelion. Well, it is related to the dandelion, and yes, the flowers are very similar. But here is a simple distinction: All dandelion leaves arise directly from the taproot, forming a basal rosette. Sow thistle sends up a much taller stalk, up to five feet or so in ideal conditions but usually about three feet. The leaves are formed along this more-or-less erect and branching stalk. The leaves are paler and more tender than the dandelion leaves, and sow thistle leaves are not as jagged on the edges as dandelion. And though the individual dandelion and sow thistle flowers are very similar, dandelion only forms one flower per stalk, whereas sow thistle will form many flowers per stalk.

RECIPE

Spring Awakening

For a dish that resembles asparagus, take just the tender sow thistle stems in the springtime (the leaves can be removed and added to other dishes). Boil or steam them until tender—it doesn't take long—and then lay the stems on your plate like asparagus. Add some cheese or butter, and it will make a delicious dish. But this is a dish that you'll only enjoy in the spring—timing is everything.

USES

Though sow thistle may not be quite as nutritious as dandelion, it's definitely tastier, and the leaves are more tender. You can take the leaves of sow thistle and include them in salads, and even when the plant is old, there is only a hint of bitterness. The flavor and texture are very much like lettuce that you might grow in your garden.

The leaves and tender stems are also ideally added to soups and stews, or simply cooked by themselves and served like spinach greens. They are tasty on their own, or you can try different seasonings (peppers, butter, cheese, etc.) that you enjoy.

The root can be eaten or made into a coffee substitute, as is commonly done with two of its relatives, dandelion and chicory. To eat the roots, gather the young ones and boil until tender. Season as you wish and serve. The roots could also be washed and added to soups and stews.

For a coffee substitute, gather and wash the roots, and then dry thoroughly. Grind them into a coarse meal, roast to a light shade of brown, and then percolate into a caffeine-free beverage. Is it good? It's all a matter of personal preference.

DANDELION

Taraxacum officinale

Dandelion in flower

Use: Leaves raw or cooked; root cooked or processed into a beverage
Range: Prefers lawns, fields, and disturbed soils.
Similarity to toxic species: None
Best time: Spring for the greens; anytime for the roots
Status: Common
Tools needed: Trowel for the roots

PROPERTIES

The *Taraxacum* genus has sixty species worldwide. In Arizona, there are three species of *Taraxacum*.

Even people who say they don't know how to identify any plants can probably identify a dandelion in a field. The characteristic yellow composite flower sits atop the narrow stem, which arises directly from the taproot. There is one yellow flower per flower stalk. These mature into the round puffy seed heads that children like to blow on and make a wish.

These grow in fields, in lawns, in vacant lots, and along trails. They tend to prefer disturbed soils, though I have seen them in the wilderness.

The leaves are dark green, toothed on the margins, and each arises from the root. The name "dandelion" actually comes from the French *dent de*

leon, meaning “tooth of the lion,” for the jagged edges of the leaves.

Dandelion rosette and seeding flower heads

USES

My first exposure to dandelion was at about age seven when my father would pay me a nickel to dig them out of our front yard lawn and throw them into the trash. Boy, things have changed! These days, I would not consider having a front lawn, and I definitely would not dig out the dandelions and toss them in the trash.

Dandelion is another versatile wild food. The yellow flowers make the plant conspicuous in field and lawns, though it's really the leaves and root that are most used by the forager.

Young leaves are the best, and because they are bitter, they are usually blanched before eating. They can be used in any cooked dish where you'd add greens, such as soups, stews, and omelets.

A young dandelion rosette in an urban setting

If you want raw dandelion greens, you'll want to pick them as early as possible in the season, or they become bitter. Bitter is not bad, and it can be

mellowed out by adding other greens. Also, oil-rich dressing makes a dandelion salad more palatable.

It's understandable that dandelions have gotten more popular—they are, after all, the richest source of beta-carotene, even more so than carrots. However, not all the greens sold as dandelions in farmers' markets and supermarkets are the genuine leaf. Frequently, we will see various endive relatives sold and called "dandelion."

The roots are also edible. The younger roots, and plants growing in rich soil, are more tender and more desirable. But I have eaten old roots and tough roots and have found a way to make them more palatable: Generally, I scrub the roots to get rid of all the soil and then boil them until tender. You can boil them whole, or slice them, and when tender, use in stews and soups.

For a coffee-substitute beverage, wash and dry the roots. Though there are a few ways you can do this, I generally do a coarse grind and then roast them in the oven until they are light brown. Then I do a fine grind and percolate them into a beverage. You can drink it black, or you can add your honey and cream.

Oh yes, and then there's dandelion wine....

These days, I can't think of dandelions without thinking of Dr. Peter Gail of Cleveland, Ohio, who spent his life promoting wild foods in general and dandelions in particular. He led workshops, seminars, and cookouts to promote the many uses of dandelion, and he compiled his recipes in his popular book *The Dandelion Celebration: A Guide to Unexpected Cuisine*, a collection of everything you'd ever want to know about dandelions.

THISTLE

Cirsium spp.

The thistle plant in flower RICK ADAMS

Worldwide, there are about 200 species in the *Cirsium* genus. About two dozen species are found in Arizona.

Use: Edible stems, youngest leaves
Range: Found throughout the United States, and widely in Arizona.
Similarity to toxic species: None
Best time: Spring
Status: Widespread
Tools needed: Knife, clippers, bag

PROPERTIES

There are many species of thistle, all with very similar appearances. Thistle normally reaches four to five feet at maturity. They can be either perennial or biennial herbs.

Thistle leaves are alternate, prickly or spiny, and generally toothed. They're about eight inches long at maturity. Thistle flowers are clustered in bristly heads. They are crimson, purple, pink, and, occasionally, white. The

lower half of the flower heads are covered with spiny bracts, resembling thistle’s cultivated relative, the artichoke.

USES

When the plant is young and no flower stalk has emerged, the root can be dug, boiled, and eaten. These are starchy, mild-flavored roots. As the plant flowers, the root becomes tough and fibrous. If you want to try eating the roots, search in the spring in rich soil. If the soil and the timing are not right, the root is too tough to eat.

My favorite part of the thistle is the stalk cut before the flowers develop while it is still tender and perhaps about three feet tall. Using a sharp knife, I first cut off the bristly leaves, and then carefully scrape off the spiny outer layer so I can handle it. Once the stalk is scraped of its outer fibrous layer, you can eat it raw—it is sweet and somewhat reminiscent of celery. We’ve served it with peanut butter for a tasty snack.

These cleaned stalks can be baked, boiled, sautéed, or added to other foods. They can be served with butter or cheese, as you might serve asparagus.

A young thistle rosette

If you've ever seen a garden artichoke, then the relationship of artichoke to thistle might be obvious. Can you eat the flowering head of the thistle like you'd eat an artichoke? Well, it depends. First, you have to clip the thistle flower while it's still young and before it has actually flowered. You boil it, and then if you peel back all the scaly bracts, you'll find just a little bit of the tender heart there. It's very tasty and worth trying, but usually, there is really not enough heart in the wild thistle to make it worth your bother.

The very youngest thistle growth is best to eat. RICK ADAMS

In general, I don’t eat the leaves because I find the prickliness irritating. Despite that, I know a few foragers who actually carry scissors to cut off the margins of the leaves so they can easily, and painlessly, eat these leaves.

If you can find the very youngest growth of spring, you can collect some very tasty greens that would even be good in a salad. On occasion, when the timing was right, I was able to collect many of the very young, emerging cotyledons and add them to salads and cooked dishes. Since the flavor of the leaves is a bit sweet, you could collect young leaves and process them in a juicer that removes the pulp and have a tasty and healthy drink.

SALSIFY

Tragopogon spp.

The yellow flower of Salsify, *Tragopogon dubius* MARK VORDERBRUGGEN

There are about forty-five species of *Tragopogon* worldwide, and five have been identified in Arizona. All are introduced.

Use: The root is used most commonly; the tender leaves can also be eaten.
Range: Widespread in lower elevations, along roadsides, hillsides, and in developed areas
Similarity to toxic species: None

Best time: Roots are best gathered in the spring; greens can be collected anytime but are best in the spring.
Status: Relatively common
Tools needed: Shovel

PROPERTIES

Salsify is a fairly widespread and easy-to-recognize plant. Initially, most folks notice the large dandelion-like flower, except it is on a much taller stalk, perhaps two feet tall. The flower is yellow, with noticeable bracts that extend beyond the petals. The yellow flower is typically *T. dubius*. (There are other species of *Tragopogon* with purple flowers, but we don't find those in the wild in Arizona.)

The seed head is just like the dandelion seed head but bigger and very round, around four inches in diameter. The leaves are linear, almost grasslike, and will exude a milky sap when broken (like dandelion or sow thistle).

Salsify is a biennial plant, meaning that it produces leaves in the first year, and in the second year, it sends up its flower stalk before it dies. The roots of the first-year plant are the most tender. If you pick the root from a flowering plant, it will be tough and a bit bitter. These are sometimes cultivated, and in those cases, they are likely to produce larger and more tender roots. But in the wild, the roots you're likely to find are thin, like pencils.

A view of salsify buds, flowers, and seeding head RICK ADAMS

USES

Salsify, also called oyster plant, is most often used for the root. Before I ever ate one, I read the descriptions of “large, fleshy roots” with an oyster flavor and imagined something similar to a carrot or radish that would cook up into some exotic seafood-like dish. However, the reality is a little different. Most of the time, I find the plant growing in compacted and hard soil, where the root has never had a chance to get large and fleshy. It is more similar to a slender carrot, a bit fibrous, and though the flavor is somewhat bland, the texture is improved by cooking.

A view of the seeding flower head LILY JANE TSONG

A view of the first year leaves of the salsify plant

Of course, it didn’t help that when I was first digging up salsify roots, they were all from the flowering plants because those were the only ones I was able to recognize as salsify. But these were the older, second-year plants with tougher roots.

Yes, there are cases where you will find an easy-to-dig root that is pretty darn good, such as during the rainy season in mulchy soil. Either way, this is such a common plant that you should at least try it. And because it’s an introduced exotic, no one will mind if you do some volunteer weed removal.

Try cooking it to tenderize, and then slice the root and add to soups and stews. In general, you'll need to cook these roots about two to three times as long as you'd need to cook potatoes. Does it really taste like oys ter? Maybe, but maybe not. Perhaps there is a slight flavor reminiscent of something like oyster.

The salsify plant before it has flowered RICK ADAMS

We have also cooked up all of the aboveground plant and eaten all that was tender. The stalk will usually be tough, but the leaves are tasty and chewy.

Wild-food enthusiast William Schlegel reports that his favorite parts of salsify are the flower buds of *T. dubius*. He uses them as a nibble when he's out on his land. At the bud stage, these are tender and make a mild vegetable.

When doing underground pit cooking, we have covered potatoes and onions and meat with the upper part of the salsify plant, which was abundant. Not only did these leaves protect the vegetables we were steaming, but we found these greens to be a tasty addition to our meal as well.

LORE

Sometimes, salsify is known as “John-go-to-bed-at-noon.” The flowers slowly begin to close around 11 a.m. and are closed by noon. The flowers stay closed for two to three hours, and then they open around 3 p.m. and stay open until dark when they close again. These plants were sometimes used in European “clock gardens.”

BARBERRY FAMILY (BERBERIDACEAE)

The Barberry family consists of about sixteen genera and approximately 670 species worldwide.

OREGON GRAPE (BARBERRY)

Berberis sp. (formerly *Mahonia* sp.)

A view of the Oregon grape fruits and leaf

The fruits of all members of the *Berberis* genus are edible. There are approximately 600 species of *Berberis* worldwide, which are widespread in North America. Six species are found in Arizona.

Use: Fruits eaten raw or made into wine, jams, or jellies.
Range: Found widely throughout the state; common in the mountainous and forested areas; often used as an ornamental.
Similarity to toxic species: None
Best time: Summer
Status: Common
Tools needed: Berry-collecting basket

A view of the Oregon grape fruits and leaf

PROPERTIES

This is a low-growing to medium-sized shrub, though some are low-growing and spreading. Leaves are alternately arranged and pinnately compound. The leaflets are holly-like, with spines along their margins. Flowers are yellow and are formed in racemes. The sepals and the petals are similar, usually in five whorls. The approximately quarter-inch fruits are bluish to purple berries and are tightly arranged in clusters that resemble tiny grapes.

A view of the fruits, and yellow flowers, of the Oregon grape

Though *Berberis* species can be found throughout the state, it is most common in central Arizona in upper desert slopes, desert grasslands, and oak woodlands. It is also planted as an ornamental, so it will be found outside its native terrain.

USES

My experience with the Oregon grape is mostly as a trail nibble, and on occasion, I have added at least a handful to mash and use as a pancake

topping. These small oval berries are tart and refreshing, high in vitamin C, and make a good jelly when lightly sweetened with honey.

According to Cecilia Garcia and Dr. James Adams in *Healing with Medicinal Plants of the West*, the fruits of all the members of the *Berberis* genus, generally all commonly called “Oregon grape,” were eaten raw or cooked by most Indians wherever the plant grew. The blue to purplish fruits of *B. nervosa* were gathered by the Yana people from the foothills and dried, then ground into a flour that was used for a mush; it is likely that many other indigenous groups did the same. Many indigenous people made drinks from these fruits. They are also quite good dried and used as a snack food, or added to cookies, cakes, or other dishes as you’d add raisins.

Garcia and Adams noted that the fruit also has antihistamine activity, which may relieve indigestion. And according to Paul Campbell, author of *Earth Pigments and Paint of the California Indians*, the fruits are especially useful in making traditional blue pigment and paint.

MUSTARD FAMILY (BRASSICACEAE)

The Mustard family is another large family, comprising more than 330 genera worldwide and about 3,780 species.

The floral characteristics that define the Mustard family are four free petals, four sepals (generally white or yellow but other colors as well), six stamens (four long, and two short), one pistil, a superior ovary, and fruits, generally a capsule or silique with two valves. Many are cultivated for food and some for ornamentals. *The Jepson Manual* divides this family into eight groups. Dr. Leonid Enari stated that he was unaware of any toxic member of this group, though some are more palatable than others. As a result, I have experimented with many of the Mustard family species in various parts of North and Central America.

MUSTARD

Brassica spp. *(B. nigra, B. campestris* and others*)*

A young *Brassica*

Use: Leaves raw or cooked; seeds for spice; flowers for garnish
Range: Fields, urban areas, and hillsides
Similarity to toxic species: None
Best time: Spring for greens and flowers
Status: Widespread
Tools needed: None

Mustard flowers HELEN W. NYERGES

PROPERTIES

There are thirty-five species of Brassica worldwide. Four of those, all nonnatives,can be found in Arizona.

Barbara Kolander collects mustard flowers.

Though you should learn to recognize the common mustards even when the plant is not in flower, it is the flower that will initially draw you to the plant. The bright yellow flower has the typical mustard family flora arrangement: four petals (shaped in an X or cross), four sepals (one under each petal), four stamens, and one pistil. These are formed in a raceme with the buds toward the tops, then the mature flowers, and then, lower on the stalk, the seedpods form. The needle-thin seedpods are about one inch long.

Christopher Nyerges shows a particularly large *Brassica* leaf, growing in good soil after a wet winter. HELEN W. NYERGES

Christopher Nyerges with a large *Brassica* plant HELEN W. NYERGES

The initial basal leaves are lyrately pinnately divided, meaning that they have the appearance of a guitar with a large, round lateral lobe and smaller side lobes. Not exactly like a guitar, but that gives you a good mental picture. As the plant matures, the leaves that form on the upper stalks are smaller and linear and look nothing like the young basal leaves.

FORAGER NOTE: This is a hardy plant. I have managed to find some mustard greens even during droughts when no other greens were available.

USES

Mustard is one of the first wild foods that I began to eat, partly because it is so common, and partly because it is so easy to identify. I recall seeing a line drawing of it in Bradford Angier's book *Free for the Eating*, which didn't look anything like the green plant with yellow flowers that I was seeing everywhere. Angier used a picture of the mature plant gone to seed, and I was seeing the young spring plant. They were both right, but it demonstrated the need to always learn plants by seeing them in the field.

I began with the young mustard greens, chewing the raw leaves and enjoying the spicy flavor, despite the fine hairs covering the leaves (not all *Brassicas* are hairy). I then moved on to chopping them up and adding to salads, which was good. I then began to boil the leaves and serve to my family, with butter. Everyone enjoyed it, even my father.

Eventually, I found that I could add mustard greens to just about any dish: soups, mixed salads, omelets, stir-fries, potatoes, you name it! The fact that I could collect these greens year-round was also a big plus.

The flower buds and flowers have also been a good trail treat and make a good colorful garnish to salads and soups. I give them to children and tell them that they taste like broccoli, and most of the children say they enjoy the flowers.

The tender tops of the stems with the flower buds can also be snapped off the upper parts of the plant, steamed, and served with some sauce or cheese. The flavor is just like the Chinese broccoli that you buy at the farmers' markets.

Lastly, you can come back to this annual plant in late fall, when the leaves are dried up and the tops are just tan-colored stems with small seedpods. Collect the pods in a bag (a pillowcase is ideal), and break them all up. The seeds go to the bottom of the bag, and you can discard the pod shell. The seeds are then used as a seasoning for various dishes calling for mustard, or you can try making your own mustard from the brown seeds.

RECIPE

Pascal's Mustard

Fellow forager Pascal Baudar takes the pungent flowers of regular black mustard and grinds them while fresh, adding white wine and vinegar to taste. He thus produces a mustard condiment from the flowers, not the seed, as is the usual custom.

SHEPHERD'S PURSE

Capsella bursa-pastoris

Young shepherd's purse leaves

Use: Leaves used raw or cooked; medicine.

Range: Prefers lawns, fields, disturbed soils, below 8,000 feet.
Similarity to toxic species: None
Best time: Spring is best for greens; the seed can be collected in late spring to early summer.
Status: Somewhat common
Tools needed: None

PROPERTIES

There are four species of *Capsella* worldwide, and only this species is found in Arizona.

Shepherd's purse is most easily identified by its flat, heart-shaped seedpods. They are unmistakable! The stalks rise about one foot or so tall. The little clusters of white flowers, sometimes tinged with a bit of purple, are formed in racemes along the stalk. These then mature into the heart-shaped pods. Trouble is, by the time you see all the seedpods, it's usually too late to use the young leaves for food, but at least now you know how to recognize shepherd's purse.

Shepherd’s purse in seed, in a field of chickweed

Heart-shaped seedpods of shepherd’s purse

The young leaves are often hidden in the grass and are somewhat inconspicuous. The basal leaves are toothed, with a large terminal lobe, typical of Mustard family leaves. The upper leaves are without a stalk and are more arrowhead-shaped. If you look closely, the young leaves will be covered with little hairs.

USES

The flavor of shepherd’s purse leaves is mild and could be used in just about any recipe, such as salad, sandwiches, soup, eggs, and so on. However, they seem best when used in salads.

Dr. Enari used to poll his students on which plant tasted the best of the many wild plants he let them try. Consistently in his polls, shepherd’s purse

was rated the best. It is actually somewhat bland and peppery but not *too* peppery, and the texture is mild. Even finicky eaters will like these leaves.

It's also very nutritious. About a half cup of the leaves (100 g) contains 208 mg of calcium, 86 mg of phosphorus, 40 mg of sodium, 394 mg of potassium, 36 mg of vitamin C, and 1,554 international units (IUs) of vitamin A.

Additionally, some Native Americans ground the seed into a meal and used it in drinks and as a flour for various dishes.

Dr. Enari told his students that this was the best plant to stop nosebleeds. Boil the plant, put a cotton ball into the water, and then apply it to the nose. It turns out that many people have used this plant medicinally, especially to stop internal or external bleeding.

WATERCRESS

Nasturtium officinale

A view of watercress at the edge of a stream

Use: Leaves raw or cooked in salads, stir-fries, soup, etc.; can be dried for use as a seasoning.
Range: Restricted to the edges of lakes and streams

Similarity to toxic species: None! However, in one case of death by poison hemlock, two campers in California once cooked and ate poison hemlock. Both became sick quickly, and one managed to walk out and get help; the other camper was found dead when rescuers returned. The survivor said that they thought the plant they ate was watercress. Though watercress and poison hemlock can grow in the same wet areas, they are very different-looking plants. Never eat any plant until you have made positive identification.
Best time: Although the plant can be collected at any time, it's best in summer before the plant flowers.
Status: Somewhat common along streams
Tools needed: None

PROPERTIES

There are five species of *Nasturtium* worldwide, and only this one is found in Arizona.

Once you learn to recognize watercress and see how the pinnately divided leaves are formed, you will find it quite easy to recognize, whether it is very young or older and flowering.

First, it's nearly always growing directly in the edges of streams where the water is slower. Occasionally, you'll find it in sandy areas, but it is always in an area that is at least seasonally underwater. You'll typically find it growing in thick mats.

Watercress in flower HELEN WONG

The leaves are pinnately divided into round leaflets. The stems are hollow, and there are white hairs on the underwater part of the stem.

The plant is in the Mustard family, so when it gets older and flowers, the white flowers will be divided into the typical Mustard family formula: four petals, four sepals, six stamens, and one pistil.

Today, watercress can be found worldwide. It was known to be a part of the diet of early Native Americans.

USES

Watercress was one of the very first wild plants that I learned how to identify and began to use. It is not only common throughout waterways (streams and ditches) of the Southwest but throughout the world.

I have always enjoyed making a salad of mixed greens, including watercress. But I don’t usually make a salad with only watercress because it’s a bit too spicy for my taste. A few raw watercress leaves are also tasty in sandwiches.

For soup, just chop the entire plant (tender stems and leaves) fine and add it to a water-or milk-based soup. Or you can add chopped watercress

leaves to a miso base. Watercress makes a delicious soup.

You can cook the greens like spinach, serving it with a simple seasoning such as butter or cheese. Or, try mixing the greens into an egg omelet.

If you’re living off MREs or freeze-dried camping food, you can add some diced watercress to liven up your meals.

Watercress leaves

Also, for those of you who'd like making your own spices, you can dry and powder watercress and use it to season various dishes. Use it alone or blend the powdered watercress with powdered seaweed or other flavorful herbs. You'll notice that some of the commercial salt-alternative spices use dried watercress leaves.

Another self-reliant idea is to dry wild foods into the basis of a soup stock, and then reconstitute them later into a soup or stew broth. Dried and powdered watercress makes an ideal ingredient in such a mix.

RECIPE

Saturday Night Special

Gently sauté half an onion bulb in a skillet with butter; you could substitute a handful of wild or garden onion greens. Quickly add at least one cup chopped watercress leaves and stems, and cook gently until all is tender. Add a dash of soy sauce and serve.

Christopher collecting watercress along a slow-moving stream. BARBARA KOLANDER

CAUTIONS

If you have doubts about the purity of the water where you get your watercress, you should not eat it raw but boil it first and then use it in a cooked dish.

Always wash the watercress before using it. It grows right in the water, and you want to remove any dirt or other undesirables that might be clinging to the plant.

HEDGE MUSTARD

Sisymbrium irio (also called London rocket) and *S. officinale*

Leaf, flower, and seedpods of *Sisymbrium irio*

Use: Leaves, raw or cooked
Range: Prefers disturbed soils of fields, roadsides, along trails, farms; can also be found in the desert regions where there is adequate water.
Similarity to toxic species: None **Best time:** Spring

Status: Common
Tools needed: None

PROPERTIES

There are forty-one species of *Sisymbrium* worldwide, and four of them occur in Arizona. They are all European natives.

Leaves of *S. irio*

If you already know the mustards (*Brassica* spp.), you will very likely think “mustard” when you see a hedge mustard. The flowers of *Sisymbrium* tend to be smaller than the *Brassica* flowers, and the leaflets of the leaves tend to be more “pointy,” versus the rounder leaves of *Brassica*. Of course,

to botanists, the distinction is mostly in the details of the flowers, but with sufficient observation, you'll be able to recognize the hedge mustards by leaf alone.

***Sisymbrium* grows through this seldom-used hose.**

FORAGER NOTE: During my high school years, my brother Richard and I frequently took winter road trips through the Southwest (Arizona, New Mexico, California, and Texas). We always tried to find wild foods to supplement our meals. We usually didn't find much in winter, but we always found hedge mustard growing wherever there was moisture. We collected and ate the spicy leaves with most of our meals.

USES

I think of *Sisymbrium* as the wild wasabi. Chew on a bit of the leaf, and you'll get that hot horseradish-like effect that opens your nostrils. I have friends who actually turn these leaves into a wild wasabi, which is great on sandwiches, crackers, and as a dip. But generally, I regard the hedge mustards as a source of very spicy greens that go well with salads, soups, egg dishes, sandwiches, stir-fries—just about any dish where you can add greens. These are spicy greens, usually a bit spicier than the greens of the common mustards (*Brassicas*).

I have had broths made from the finely diced hedge mustard leaves, into which a lot of rice had been added. This dish was hot and good! I have had "wild kimchee" consisting of wild greens that had been marinating in raw apple cider vinegar. A lot of the hedge mustard leaves were used in one of these kimchee, and it was delicious.

You could also dry the hedge mustard leaves and either reconstitute them later or just powder them and use it as a seasoning.

The flowers are good, too, but they aren't quite as good as the *Brassica* mustard flowers. Hedge mustard flowers seem to have too much of that bitter and astringent bite, so I use them sparingly in soups and salads but mostly in cooked dishes.

RECIPE

Screaming at the Moon

A hedge mustard soup recipe

2 cups chopped hedge mustard leaves

2 garlic cloves, peeled and crushed

3 cups water

¼ cup miso powder

Simmer the leaves and garlic with the water in a covered pot. When tender, add the miso and cook another five minutes. Serves two to three.

TANSY MUSTARD (*DESCURAINIA PINNATA* and/or *CALIFORNICA*)

Descurainia spp.

Use: Leaves, raw or cooked; seeds eaten
Range: Prefers disturbed soils of fields, roadsides.
Similarity to toxic species: None
Best time: Spring
Status: Common seasonally
Tools needed: None

A view of the tansy mustard plant with flowers and pods

PROPERTIES

There are about forty species of *Descurainia* worldwide, and six of them occur in Arizona. They are all European natives.

If you're seeing this for the first time, and you're at least somewhat familiar with the Mustard family, you will think "mustard." It's an obvious member of the Mustard family but not a *Brassica*. The overall appearance is small, more delicate, with leaves that are more finely divided, and perhaps not as bright green.

In the wet flat areas, especially in the spring when you are likely to see large patches of the tansy mustard, these will rise up to two feet, and possibly a bit taller in ideal con-green, pinnately divided, and slightly hairy. Each leaf will be about two inches long.

The bright yellow flowers, as with all members of the Mustard family, are arranged in terminal racemes. As the flowers mature and the pods form, the pods point outward with the tip often pointing up.

Along the edges of waterways, you can find large volumes of tansy mustards after rains, where it will be easy to harvest.

Close-up of tansy mustard leaf and flowers

A view of the flowers and pods of tansy mustard

Another view of the flowers and pods

USES

Most Native people collected the seeds of the maturing tansy mustard and ground them into a meal. The meal was added to other foods or mixed into water for the basis of a drink. The Cahuilla used the seeds of *D. pinnata* in soup and mixed the seeds with other vegetables for flavoring. The Navajo have formed the *D. pinnata* seeds into cakes. The Akimel O'odham have

mixed *D. pinnata* seeds with water to make a mucilaginous mass that was then eaten.

I've collected the pods, winnowed the seeds, and then added the salads. You can also add the seeds into your soup dishes for a subtle spiciness.

When the plant is young, you can collect enough of the greens to make a salad or enough to make a few servings of the cooked greens. As a general principle, I never uproot this plant, even though I have been encouraged to do so because it is not a native.

The Hopi people used the leaves boiled and eaten, as did most of the Arizona tribes.

I have tried a simple broth from the leaves of tansy mustard. It was good! As a soup with a few potatoes or other roots, it's significantly better as a meal.

CAUTIONS

Since tansy mustard can appear on the ranges in abundance after rains, livestock have been known to feed exclusively on this, which they seem to enjoy. However, if they eat large quantities, they might be unable to eat or drink for awhile. The mature seeds are rich in "oil of mustard" but otherwise do not contain a known toxic chemical.

Close-up of the leaves

CACTUS FAMILY (CACTACEAE)

There are 125 genera in the Cactus family, and about 1,800 species worldwide, mostly in the American deserts.

According to Dr. Leonid Enari, the entire Cactus family is a very safe family for consumption. However, some are mostly too woody for food. A very few are extremely bitter—even after boiling—and you'd not even consider using them for food. In general, the fruit of all can be eaten.

If you choose to experiment, just remember that palatability is the key. Don't eat any that are too woody or any that are extremely bitter. Any that have a white sap when cut are not cacti but look-alike members of the *Euphorbia* family.

SAGUARO

Carnegiea gigantea

A view of the saguaro cactus KINGWU/GETTY IMAGES

Use: Fruits eaten.
Range: Found only in the Sonoran Desert in Southern Arizona and parts of southeastern California.
Similarity to toxic species: None
Best time: Fruits mature in July.
Status: Somewhat common locally
Tools needed: A collecting pole

Close-up of the spined ribs DAVEMORGAN/GETTY IMAGES

PROPERTIES

This is such a stereotypical cactus of botanists know what you mean when you say, “saguaro cactus.” If they don’t get it the first time, you say, “You know, the cactus with the arms,” and you put your arms up in the air, mimicking this giant and they always nod their heads knowingly.

In fact, the popularity of this cactus has actually been a cause for alarm. To a cactus smuggler, one of these tall desert giants can fetch big bucks, and the illegal trade in this species is a problem.

Saguaro is the largest US cactus, with an occasional height of fifty feet. It is almost treelike with a massive vertical trunk and several branches. The trunks have many ribs and are covered with stiff, straight spines.

The buds and flowers of saguaro JAY PIERSTORFF/GETTY IMAGES

Ripe fruit of saguaro AZCAT/GETTY IMAGES

The white flowers are nocturnal. The fruits that follow in the summer are oblong and crimson red.

USES

The body of this cactus is not edible, as it's too woody to eat. But the fruits, seeds, and flowers are used in a variety of recipes.

Since this cactus is so tall, you're going to need a picking pole to collect the fruit. Peel the skin and taste the fruit. You might like it just as is.

One method of processing the fruit, as practiced by the Tohono O'odham, was to peel the fruit, crush it, and then add all the fruit with a bit of water to a pot and bring it to a boil. The pulp is then boiled for about twenty minutes, or until the red juice turns a brownish color and thickens. The juice is poured through a strainer to remove the seeds—save those seeds! Then strain the juice once again through a cloth. This is cooked again and reduced to a syrup that will keep well, refrigerated, for over a year. This is often canned as well and will keep even longer.

The oily seeds can be added whole to cereals, bread and pancake batter, and even salads. The seeds can also be ground into a flour and used for pastry products.

CAUTIONS

Only collect on private property with permission. In one widely reported incident, an illegally uprooted saguaro plant fell onto a cactus smuggler and killed him!

RECIPE

Arizona resident Paul G. Olsen supplied this recipe for ice cream, originally published in *The Cactus and Succulent Society's Cactus Cook Book*.

Saguaro Ice Cream

2 eggs

1½ cups cream, whipped

½ cup saguaro jam

⅜ cup powdered sugar

First, beat the yolks and then the egg whites until stiff. Whip the cream. Add the saguaro jam to the beaten yolks, fold in the beaten whites. Add the powdered sugar and fold in the whipped cream. Freeze in tray and stir once during freezing.

RECIPE

Saguaro Jelly

This recipe was also provided by Paul G. Olsen of Arizona, originally published in *The Cactus and Succulent Society's Cactus Cook Book*.

1 cup juice of saguaro fruit

2 cup granulated sugar

⅓ cup pectin

Clean off the spines and skin of the fruit, and chop or mash the fruit fine. Put in a pot and cook for ten minutes. Skim off any dirt on the surface. Strain through a jelly bag, and then add the sugar, and boil briskly for two minutes (to dissolve the sugar). Remove from the fire and add the pectin while constantly stirring. Boil for one minute, and then pour into sterilized glasses. Can, or seal with paraffin when partly cooled.

BARREL CACTUS

Ferocactus spp.

A woman at an Arizona barrel cactus garden

Use: Flowers and fruits
Range: Found at elevations of 1,000 to 4,000 feet, in sandy desert and alluvial plains.
Similarity to toxic species: None
Best time: Spring into summer

Status: In Arizona, found in the Sonoran Desert in the southern part of the state, where it is somewhat common.
Tools needed: Gloves

PROPERTIES

Three species of *Ferocactus* are found in Arizona. Though these have been noted as tall as ten feet, they are mostly around two to three feet tall. It is a cylindrical unbranched cactus, with an appearance (when young) that has been described as an elongated basketball. The spines appear in vertical rows, or ribs. The grey to reddish spines are conspicuous and densely packed along the ribs, surrounded by the smaller glochids. Each hooked-flattened spine can be up to two inches long. The central spine in each cluster is typically more sharply hooked than the others and the source of another common name of this cactus: fishhook cactus.

The flowers are cup-shaped, colored from yellow to orange to red, appearing at the crown of the cactus. The flowers can be about two inches wide. It blooms from July through September. The waxy, bright yellow fruits follow the blooming and begin to ripen around November. The barrel-shaped fruits are scaly and nearly two inches long. The fruits can persist throughout most of the year and can be harvested into the next spring.

Barrel cactus with fruit

USES

In the old days, the buds and flowers were collected by the Seri of the Sonoran Desert. These were boiled before eating and were cooked into different dishes.

These days, the buds are often pickled and seasoned before eating.

The slightly sour fruits have many possibilities. They can be chopped and added to cakes, pancakes, or other baked goods. They can be added into candy, chutney, or salsa and also dried for later use.

Barrel cactus with fruit

The seeds have long been a desirable part of the fruits. These fatty seeds can be eaten raw or toasted. They can also be ground into a flour and used alone or added with other flours to make baked goods or drinks, called atoles. The seeds are a bit bland and very versatile.

Barrel cactus with fruit

A view of the barrel cactus

A view of the barrel cactus

This cactus is not considered an important water source for a lost desert traveler, but the inner flesh could be eaten. Typically, pieces of the tender inner flesh would be cooked in a syrup to make palatable, like making a cactus candy. In the old days, this was done mostly during times of drought, but today, making candy from these cacti is discouraged because it kills the plant.

Arizonan Paul G. Olsen, writing in the *Cactus Cookbook*, describes how to prepare barrel cactus pulp for use in any recipes calling for this pulp.

Begin by cutting off the section of the rib that contains the spines. Then, using a saw, cut off a section of the barrel, about six inches thick. Cut this into pieces about one-inch square. Soak these in water for twelve hours. After twelve hours, drain the water, and soak the pulp in water again for twelve hours and drain. Now it’s ready to be used. Olsen emphasizes that you need to select a “juicy” barrel, or else the pulp will be very tough.

If “shredded cactus” is required in recipes, Olsen suggests following this above procedure and then shred the pieces of pulp, with a cheese shredder or other tool.

I’ve never actually tried Olsen’s recipe, but it really seems like a lot of work, and it means the death of the barrel cactus. I’m sharing these recipes for their historical value, but I’d suggest that you not do this unless there isn’t really much else to eat.

Olsen provides the following recipe for a cactus conserve.

RECIPE

Barrel Cactus Peach Conserve

2 cups barrel cactus pulp, thinly sliced

1 cup fresh peaches, chopped

1 orange, both the juice and grated rind

2½ slices of pineapple, cut into small pieces

¼ cup pineapple juice

Juice of one lemon

1½ cups sugar

½ cup raisins

Prepare the barrel pulp, as described in this entry. Olsen suggests that the pulp be sliced thin and that you should cook it five times. Then all the ingredients are added and cooked slowly until the desired consistency is achieved.

PRICKLY PEAR

Opuntia spp.

Prickly pear pads in the field

Use: Young pads for food, raw or cooked; fruits for desserts and juices; seeds for flour
Range: Typically found in the desert regions, but also commonly found in dry fields, and commonly cultivated.
Similarity to toxic species: Occasionally, people have experienced sickness after eating certain varieties. In some cases, this is due to a negative reaction to the mucilaginous quality; there might be other chemical reasons as well. So, despite this being a very commonly used food for millennia, we suggest you start with very little and monitor your reactions.
Best time: Spring is best time to collect the new pads, though the older ones can also be used. September through October is best time for harvesting the fruits.
Status: Common
Tools needed: Metal tongs, sturdy bucket, possibly gloves

PROPERTIES

There are twenty-four species of *Opuntia* in Arizona, not counting varieties; most are native. We are mostly concerned with the prickly pears—the oval-shaped, flat-padded cacti—because these are the easiest to harvest, prepare, and eat.

The prickly pear cacti are by no means the only variety of cactus commonly observed in Arizona, but they are probably one of the most common cacti in, and on the fringes of, the urban areas. The prickly pear cacti are readily recognized by their flat oval pads, called *nopales* in Spanish, with their spines evenly spaced over their surface. The cacti flower by summer, and the fruits mature by August and September in a variety of colors, ranging from green (less common) to yellow, orange, red, and purple. Each of these fruits has a different flavor and was traditionally used in different recipes.

Ripe prickly pear cactus fruit

First season prickly pear pad

Nearly all species of *Opuntia* have a long history of being used for food. The key to using this plant is to find a way to harvest and clean it without getting the spines—and the finer glochids at the base of each spine—in your fingers. The pads are generally easier to harvest, though I still recommend using metal tongs. The very young, still glossy-green pads can be scraped with a sharp knife to remove the spines and glochids, then rinsed before using in a recipe. There is a variety with recessed spines that I simply leave alone. The fruits tend to have more spines, and I collect them with metal tongs. Still using the tongs, I turn each fruit over in a flame—about ten seconds—to burn off the spines and glochids. Then I cut them in half, remove the fruit inside, and eat, preserve, or process it in some way.

FORAGER NOTE: If you collect cacti, you will—sooner or later—get spines and glochids in your skin. Spines are easy to see and relatively easy to remove, but glochids are smaller, hairlike, and more difficult to remove from the skin. Try smearing white glue on the part of your hand that has glochids. Let the glue dry, then peel it off. This will usually remove most glochids.

USES

There are several ways to get a meal from the prickly pear cactus: young pad, old pad, fruit, or seed.

Whether you pick your pads from the wild or grow cactus in your backyard, the new growth of spring offers one of the more readily available foods with the least amount of work. Remember, nearly all cacti have some spines and the tiny little glochids, so you'll need to be careful whether you have the very young or the very old pads. And some varieties are less spiny than others; these are the ones I choose. There are also some "spineless" cacti that are easier to handle and clean, though they do contain the small glochids that must be removed.

Green cactus pads, cleaned and sliced. These are now ready for cooking.

When you get the very young pads of spring, they are still bright green and the tough outer layer hasn't yet developed. Carefully pick, and then you can quickly burn off the young spines, or thoroughly scrape each side to remove all spines and glochids. Then you can slice or dice and sauté them to remove much of the liquid and sliminess of the cacti. Cook off the liquid produced by the cooking cacti, and then add eggs, potatoes, or even tofu for a delicious stew. Older pads are also edible, but their flavor and texture are different. If you simply cut a large prickly pear pad in half, you'll see that the fiber is all toward the surface. You can carefully slice off the outer fiber layer and use the insides. The flavor and texture resemble squash, and you can use these older cactus pads in soups, stews, or the more traditional manner of cooking with eggs.

Prickly pear cactus pads that have been sliced and dried

Another way to prepare the young pads is to clean, slice, marinate, and dry. Don’t slice these too thin because the pad is mostly water and the dried pieces will be very tiny. Dried cactus “chips” are slightly sour, and you give them flavor based on the marinade you choose (sweet, sour, salty, etc. I prefer Bragg Liquid Aminos All-Purpose Seasoning). They make a great snack, can be added to other foods, and will give you the health benefits similar to eating the pads fresh.

Fruits are delicious, too, and are the closest thing, aside from the abundance of tiny seeds, to watermelon that you'll find in the wild. Prickly pear fruits may ripen green, yellow, orange, purple, red—there are many varieties with subtle flavor differences. I like the yellow the best, but I will harvest whatever I can get. If I am out on a walk and just see a few ripe fruits, I will carefully pick the fruit, scrape off the stickers with my pocketknife, slice the fruit in half, and lift out the inner edible portion. However, if there is a large patch that I can harvest, I go with a plastic tub and metal salad tongs. I carefully fill the tub with the ripe fruit. Then, at home, using the metal tongs, I quickly pass each fruit through a flame to burn off the glochids and spines, and then rinse and wash them. I cut open each fruit and either eat it as is, or I deseed them and store them to use later in such foods as drinks, jams, pie filling, and so on. An excellent drink is made by mixing 50 percent of this cactus fruit puree with 50 percent spring water.

Monica Montoya holds an older prickly pear pad, to show how it can still be eaten.

Montoya cuts the thick pad in half.

A happy face cactus!

Montoya shows the cross section of the cactus pad.

Tasting the raw cactus pad. Hmmm . . .

Montoya cuts a piece from the inner part of the pad, which is most tender.

In the old days, even the seeds from the prickly pear fruits were saved, dried, and ground into flour. I've tried it a few times. They have a unique flavor, but it's a lot of work.

MEDICINAL PROPERTIES

Eating the prickly pear pads (raw, cooked, or in juice) has long been considered one way to combat diabetes. For those who don't want to grow, clean, and cook their own nopales, you can now purchase the powder that you consume in various ways to combat diabetes. But there are so many simple and tasty ways to cook and prepare the prickly pear cactus pads that I can't see why anyone would buy the powdered cactus in a pill bottle! But consider this: If you have diabetes and you change your habits and diet to try to cure yourself, but there is no change in your diabetic condition, the

worst that has happened is that you have been eating cactus. Thousands of people have died from some of the very drugs that have been introduced in recent decades that were intended to cure diabetes! Sometimes it's really worthwhile to look to the past for a more fulfilling future.

CAUTIONS

Read "Similarity to Toxic Species" above.

Periodically, I have read and heard that "some prickly pears are poisonous (or toxic)." It's correct that some people react adversely (sometimes with nausea) to the mucilaginous quality of the cactus pads, and that seems to be more of an individual aversion.

The only exception was a report given to me by Arizona resident Cody Lundin, describing how several people became sick from eating from a particular prickly pear patch in Arizona. We were unable to determine if there was something unique about that particular cactus patch, perhaps something to do with the soil, that caused the sicknesses.

Considering that all these species of prickly pear have been eaten widely around the world, usually with no regard to species, we generally regard all prickly pears as a very safe and good food.

In a review of the ethnobotanical properties of Arizona's two dozen species of *Opuntia*, and others, we were unable to find any data about toxic qualities of any of them. Still, anytime you collect foods from the wild, there are factors that are not under your control, so you always need to exercise caution and common sense when collecting and using wild foods.

ORGAN PIPE CACTUS, PITAHAYA DULCE, OR PITAYA

Stenocereus thurberi

The organ pipe cactus plant

Use: Fruits eaten
Range: Found in the rocky hillsides in and around the Organ Pipe Cactus National Monument, and south into the Sonoran and Baja Deserts. It can be found elsewhere when planted.
Similarity to toxic species: None
Best time: Fruit matures in late summer.
Status: Common locally
Tools needed: In general, some sort of picking device is needing, like the fruit pickers used for apples and avocados.

PROPERTIES

This is a cactus composed of columnar branches or stalks that can rise up to twenty feet. This is the second-largest cactus in the United States. Each stem can be about eight inches wide and have from twelve to twenty ribs. Arising from each areole are about eleven to nineteen straight spines that are brown to black in color.

Flowers form on the sides and tips of the stems.

The pale lavender flower is funnel-shaped, nocturnal, and grows to about three inches wide.

The organ pipe cactus plant

The fruits follow, maturing in about July. Fruits are nearly round, about three inches in diameter, with spines, and are about the size of a tennis ball. The exterior of the fruit is a dusty-rose hue and is often covered in splotches of pale yellow. Organ pipe cactus stems and fruits also have clusters of sharp, spiky protrusions covering their exterior. These clusters provide protection and shade that helps to slow water loss from the cactus. Once fully ripe, most of the spines will fall off, and the skin of the fruit will begin to crack, revealing a deep red flesh. The internal flesh of the organ pipe cactus fruit is succulent with a sweet, tart flavor and is speckled with numerous tiny black seeds.

Organ pipe cactus fruit flesh is red, with tiny black seeds. SPECIALTY PRODUCE

Today, the bulk of organ pipe cacti in the United States are located in a protected monument region, and as a result, the fruits are not as commonly consumed or sold. In Mexico, however, the cactus still grows wild, and when the fruits come into season, they are harvested to provide a source of food locally as well as a source of income as a crop sold at the markets.

USES

Tohono O'odham and other desert people collected the fruits and made a syrup. The seeds and pulp were also collected and dried and eaten during the winter.

The fruit's flavor is pleasant, akin to a watermelon. Though the saguaro fruit is widely regarded as the best-tasting cactus fruit, some regard this fruit as even more flavorful.

The fruit was sometimes dried and stored for later use. The dried fruits would be eaten dry or reconstituted and eaten raw or cooked.

The flesh can be pureed and incorporated into desserts such as sorbet and popsicles. Organ pipe fruit can be blended and strained to make juice, cocktails, smoothies, wine, or agua fresca. The pureed fruit can also be used to make vibrant-hued sauces and jellies or syrup for use in shaved ice. For best quality, store organ pipe cactus fruit in a cool, dry location and use within a week of harvest.

The Akimel and Tohono O'odham tribes collected the fruits when ripe and would eat them fresh, ferment them to make wine, and dry the fruits to provide sustenance long past the hot summer fruiting season of the cactus. The seeds of the fruit were also dried and ground down to make flour for use in making seed cakes.

Organ pipe cactus fruit was also used medicinally, and the cactus stems can be used to build shelter and torches.

CAUTIONS

Before using organ pipe cactus fruit, be sure to remove the outer skin carefully and make sure all the spines are removed.

OTHER SIMILAR CACTI

APPLE CACTUS

A view of the columnar *Cereus repandu*s cactus, in fruit

A close-up of one fruit, showing the white insides

In Arizona, there are some other cacti that also grow in columnar style, like the organ pipe. Some are found in the wild, and some are found in ornamental gardens.

For example, *Cereus repandus*, commonly called the apple cactus, has a similar overall appearance to the organ pipe, and it is often grown for a border of properties, or for its fruit, which contains no spines.

You would not eat the columns of the apple cactus, unless perhaps you were starving and there was nothing else. You eat the fruit, which is easy to collect and easy to eat. Because the fruit have no spines, you can pick them with your bare hands. When I eat one of these, I typically cut it in half and remove the thick flesh. Then—assuming I

don’t eat it on the spot—I chill it, and then slice it before serving. The flesh is white with tiny black seeds scattered throughout, delightfully sweet, and slightly mucilaginous.

The only complaint I’ve heard about this one is that the plant doesn’t produce as many fruits as other species of cactus, such as the Prickly Pear cactus.

PINK FAMILY (CARYOPHYLLACEAE)

The Pink family consists of eighty-three to eighty-nine genera (depending on which authority) and about 3,000 species worldwide.

CHICKWEED

Stellaria media

Chickweed patch, showing opposite leaves and white flowers

Use: The leaves are best raw in salads but can also be cooked in various dishes or dried and powdered to make into pasta.

Range: Scattered widely where the conditions are ideal: moist and shady areas in the urban setting, disturbed soils, open woodlands, cultivated fields, and along rivers

Young chickweed. Note the flower buds.

Similarity to toxic species: It's possible to find young common spurge (*Euphorbia peplus*) in chickweed patches, which superficially resembles the chickweed, but spurge doesn't have the line of white hairs, its stalk is more erect, and the leaves are alternate, not opposite like chickweed. Break the stem of spurge and you will see a white sap; it shouldn't be eaten.
Best time: Spring; chickweed rarely lasts beyond midsummer.
Status: Common
Tools needed: None

PROPERTIES

Worldwide, there are 190 species of *Stellaria*, and six of those are found in Arizona. Common chickweed is from Europe and very common in Arizona. In fact, it can be found worldwide.

Chickweed is common in urban yards, especially preferring disturbed soils where there is sufficient moisture. It is a short-lived annual that shrivels up by summer when the soil is dry.

Chickweed is a low-growing, sprawling annual that first arises after the winter rains. The thin stem will grow up to one foot long, and upon close inspection, you'll see a line of fine white hairs along one side of the stem. The oval-shaped leaves, arranged in pairs along the stem, come to a sharp tip. The flowers are white and five-petaled, though it may appear to have ten petals because each flower has a deep cleft.

USES

Chickweed is probably best used as a salad plant. In a thick patch of chickweed, one can cut off a handful of the stems just above the root. Then you just rinse the leaves, dice, and add salad dressing.

RECIPE

Mia's Chickweed Soup

Although chickweed is found in common city sidewalks, it's best to gather it in the wild, away from pesticides. As an homage to its humble origins, I call this my "Sidewalk Soup." It's simple and low-fat (you can omit the pancetta or bacon, and it's still amazing) and has a surprising depth of flavor reminiscent of spring peas and pea shoots. This is my version of "wild split pea soup."

4–5 tablespoons diced pancetta (or you can use bacon)

1 medium onion, diced

1 stalk celery

1 carrot

1 teaspoon olive oil, or as needed

4–5 cloves garlic, finely minced

1 teaspoon fennel seeds

1 small laurel bay leaf

1 small white sage leaf

2 teaspoons French or Italian herbs (I like oregano, thyme, parsley)

1 small potato, cubed

6 cups packed washed and chopped chickweed

1 teaspoon raw apple cider vinegar (to keep mixture green)

Olive oil, salt, and pepper to taste

In a heated stockpot, sauté the pancetta or bacon until crisp, then add onion, celery, and carrots and sauté until translucent. You may need to add a bit of olive oil to the bottom of the pan; start with one teaspoon. Add the garlic and spices and continue to sauté until just fragrant. Add the cubed potato; it will serve to thicken the soup once pureed. Add the chickweed (save a handful for garnish) and add enough water to cover the chickweed with an inch of water. Cover and bring to a boil. Add the vinegar, then reduce to a light simmer for about twenty to thirty minutes.

Once slightly cooled, transfer to a food processor and puree the mixture. Serve with tender, crisp chickweed as a garnish. Delish!

—RECIPE FROM MIA WASILEVICH

Fresh chickweed collected, rinsed, and ready for salad

The plant can also be cooked in soups and stews. For those who are more adventurous, the entire aboveground chickweed plant can be dried, powdered, and mixed fifty-fifty with wheat flour, and then run through a pasta machine. The result is a green pasta with the flavor of chickweed.

A mash of fresh chickweed leaves will help to allay the pain and swelling from mosquito bites. I've personally found this more efficacious than the more widely suggested plantain leaf. We've also found that at least one Amish family sells dried and powdered chickweed in a salve to be used for mosquito bites.

Because chickweed grows close to the ground with its fine stems, it is common to find other plants growing in chickweed patches, so you need to make certain you are only collecting chickweed. We've seen poison hemlock growing within chickweed patches, so be sure to check the plants that you gather carefully.

GOOSEFOOT FAMILY (CHENOPODIACEAE)

The Goosefoot family consists of one hundred genera and about 1,500 species. It is found worldwide, especially in the deserts, and in saline or alkaline soils. Some species are cultivated for food. According to Dr. Leonid Enari, this is one of those very promising plant families for food. His research indicated that most of the leaves could be used for food, either raw or cooked, if too bitter and unpalatable. Dr. Enari also stated that the majority of the seeds could be harvested, winnowed, ground, and used for a flour or flour extender.

SALTBUSH

Atriplex patula, A. elegans, A. wrightii

Saltbush leaves RICK ADAMS

Use: Leaves can be used raw, if palatable, or cooked; dried for seasoning.
Range: Sandy soil, somewhat saline; can also be found in disturbed and cultivated soil.
Similarity to toxic species: None
Best time: Spring
Status: Somewhat common
Tools needed: None

Young saltbush plant RICK ADAMS

PROPERTIES

The *Atriplex* genus has about 250 species worldwide, all generally known as salt-bush or orach. There are over twenty-five species of *Atriplex* in Arizona, not including varieties. Most are native.

When most folks see saltbush for the first time, they think it is a lamb's-quarter plant with pointy leaves. Saltbush really does resemble lamb's-quarter. Look closely at each leaf. The color is very much like lamb's-quarter, except that the leaf has two bottom barbs that make it look very much like an arrowhead. Also, look closely at the young leaves, and you will note that the very edge of the leaf has the red tint that you often see in the stems of lamb's-quarter.

The plant is found around seasonal streams and ditches. It grows about two feet tall and has inconspicuous flowers.

Saltbush is easy to grow in your backyard garden. Once it's planted and goes to seed, it will reseed itself indefinitely, as long as the conditions are suitable.

USES

Saltbush is used more or less as you'd use lamb's-quarter, except it's a bit saltier and sometimes more bitter. This means that sometimes you wouldn't use salt-bush in salads, unless very sparingly for that salty flavor. On the other hand, I have eaten raw saltbush leaves that were mild and tasty and wonderful in salads. The soil, time of year, and age of the plant all seem to play a role in the palatability of saltbush.

The young saltbush leaves can also be boiled like spinach and eaten alone. Changing the water and cooking again usually improves the flavor. More people will probably enjoy the leaves when added to mixed greens, vegetable stew, or soup, or added sparingly to rice or egg dishes.

A view of the overall saltbush plant RICK ADAMS

Try drying and powdering the saltbush leaves and then using it as a salt substitute. Try it sparingly at first, because it could be very strong.

LAMB'S-QUARTER, WHITE AND GREEN

Chenopodium album and *C. murale*

Use: Leaves used raw or cooked; seeds added to soups or bread batter; leaves dried for seasoning.
Range: Prefers disturbed soils of farms, gardens, hillsides, fields, along trails, etc.
Similarity to toxic species: Western black nightshade leaves can be confused with lamb's-quarter leaves when very young. Be sure to look for the white mealy (and "sparkly") underside of lamb's-quarter and for the streak of red in the axils.
Best time: Spring for the leaves; late summer for the seeds
Status: Common and widespread
Tools needed: None

Young *Chenopodium album* after a rain

White lamb's-quarter, *C. album*, growing in a crack in cement

PROPERTIES

Chenopodium has about one hundred species worldwide, and at least four are in Arizona.

Lamb's-quarter is a plant that everyone has seen but probably not recognized. It's an annual plant that sprouts up in the spring and summer in fields, gardens, and disturbed soils, and generally grows about three to four feet tall. (I it growing in the cracks in the sidewalks and alleys of urban areas in the spring. did record one *C. album* at twelve feet, but that's the exception.) I've even seen it growing in the cracks in the sidewalks and alleys of urban areas in the spring.

The freshly harvested leaf, ready to be processed into soup and salad

The leaf shape is roughly triangular, somewhat resembling a goose or duck’s foot, hence the family name. The color of the stem and leaves are light green, and the axils of the leaves (and sometimes the stem) are streaked with red. The bottom of each leaf is covered with a mealy substance, causing raindrops to bead on the leaf.

A view of wild lamb's-quarter seed, with Sacajawea dollar for size comparison

As the plant matures in the season, inconspicuous green flowers will appear, and seeds will form as the plant dries and withers.

USES

Lamb's-quarter is a versatile plant that can be used in many recipes. The young tender leaves can be cut into small pieces and used in a salad. The leaves and tender stems can be cooked like spinach and seasoned for a tasty dish, and the cooking water makes a delicious broth. The leaves can also be added to soups, egg dishes, quiche, and even stir-fries with other vegetables.

Lamb's-quarter goes to seed by late summer, and seeds from the dead plant are harvestable for several months. The seed is an excellent source of calcium, phosphorus, and potassium, according to the USDA. Collect the seeds by hand and place in a large salad bowl, then rub them between your hands to remove the chaff. Next, winnow them by letting handfuls drop into the salad bowl as you gently blow off the chaff. The seeds are then added to soup and rice dishes and bread batter. Or, just cook the winnowed lamb's-quarter seed and serve with butter and/or other seasonings. Think of it as

“poor man’s quinoa.” Quinoa (*C. quinoa*) is a close relative of lamb’s-quarter.

CAUTIONS

Older leaves may cause slight irritation to the throat if eaten raw without dressing. Some have reported diarrhea after their first time eating lamb’s-quarters; it is most likely that their body was getting adjusted to a new food.

RUSSIAN THISTLE

Salsola tragus (formerly *S. kali*)

A view of the Russian thistle RICK ADAMS

Use: The very young new growth can be cooked and eaten.
Range: Though seemingly a stereotypical plant of the desert, Russian thistle is somewhat widespread in valleys, fields, disturbed soils, and the

fringes of the urban sprawl.
Similarity to toxic species: None
Best time: Spring
Status: Can be common locally and seasonally.
Tools needed: None

PROPERTIES

There are about one hundred species of *Salsola* worldwide. In Arizona, there are three species, and all of them introduced.

Everyone seems to know Russian thistle (aka tumbleweed) from the Western movies: large, dry, round plants that blow across the plains in the wind. And while that is somewhat accurate, there is nothing edible when the plants mature into those large, dry balls.

It is the very young new and tender growth that can be used. The color of the stalk and leaves is pale green, almost a shade a blue, and the leaves are spiny and shaped like needles, maybe one to two inches in length. These leaves are covered with fine hairs, and you can usually observe some red in the axils and on the stalks.

Russian thistle has needlelike leaves.

Interestingly, though a very inconspicuous plant, it produces an equally inconspicuous flower that is actually very beautiful if you take the time to observe it. The flowers are small and measure approximately eighth to a quarter-inch across, and they consist of sepals that appear fragile and paperlike; there are no petals. These flowers are formed individually in the upper axils of the plant.

As the plant matures and gets older, it turns into the dry, round ball up to three feet in diameter, and when its small root is broken free by the wind, it

rolls over the countryside and spreads as many as 200,000 winged seeds per plant. No wonder it’s everywhere!

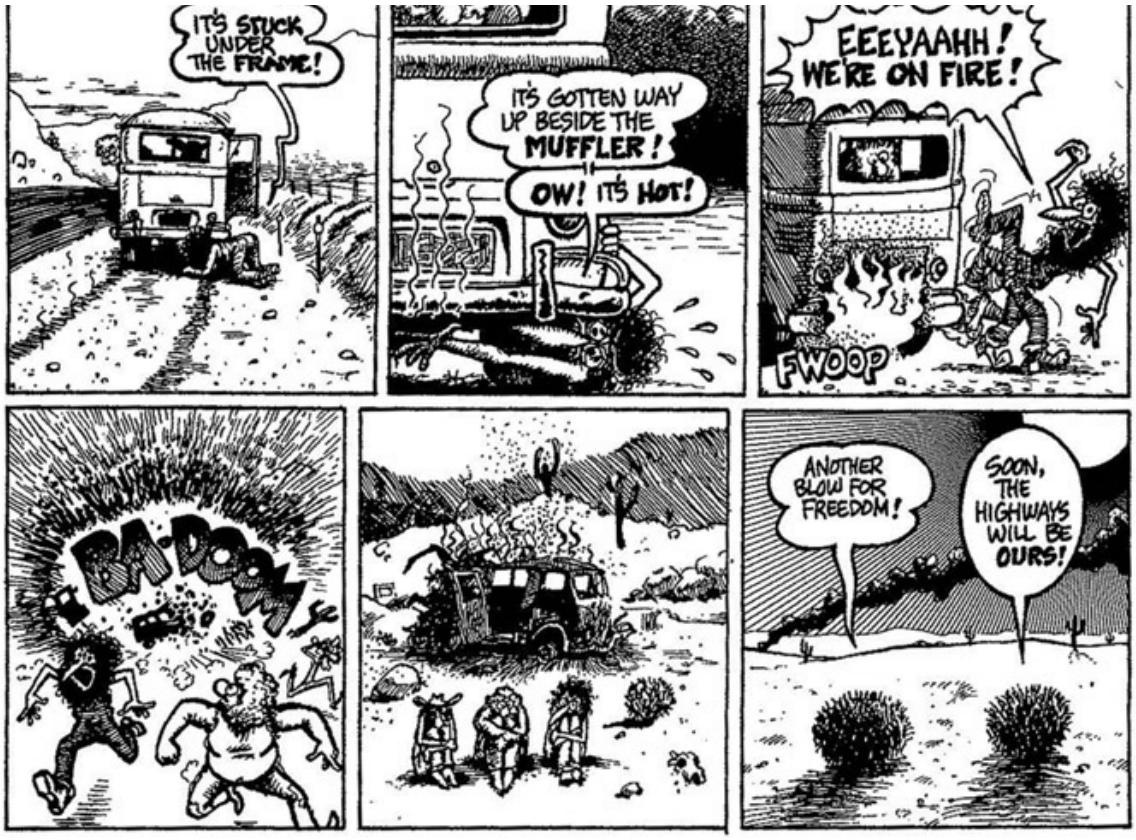
USES

Our main source of food here is the young, tender leaves. Collect them individually, so you know they are still tender. I usually simply boil and serve with butter. They can also be served plain or with cheese.

Once boiled, taste the juice. It’s actually a pretty good broth. You can drink it plain or use it as a soup base.

FORAGER NOTE: This plant is native to Central Asia and eastern Russia. The United States purchased flaxseed from Russia in 1874, and the Russian thistle seed was in the flax. Russian thistle thus made its first appearance in North America in Scotland, South Dakota.

FAT FREDDY'S
CAT
... and his friends
COPYRIGHT © 1974
BY GILBERT SHELTON & DAVE SHERIDAN
DON'T LET ANYONE EVER TELL YOU THAT TUMBLEWEEDS AREN'T DANGEROUS!
WATCH OUT! YOU'RE GONNA HIT THAT TUMBLEWEED!
HA HA HA! A TUMBLEWEED CAN'T DO ANYTHING TO YOU!
THEY'RE LIGHT AS A FEATHER!
CRUNCH
SCRAPE



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A close-up shows the papery flowers of Russian thistle and the red coloration in the axils.

If I am mixing Russian thistle with other vegetables or greens, I will chop it up a bit first. If the leaves are tender enough, they could be boiled, then mixed into a casserole or even a meat-loaf-type dish.

Sometimes, if you get the very youngest shoots of the Russian thistle, you can quickly dip them into boiling water to reduce their fibrous surfaces.

They can then be used in raw dishes without experiencing any irritation to the throat.

RECIPE

Tumbled Rice

Cook one cup of rice (use some good rice, like wild rice or long-grained brown rice) according to the package instructions. Separately cook about two cups of tender Russian thistle leaves and about one cup of chopped hedge mustard leaves. When all is cooked, blend them together while still hot. Give it a bit of garlic powder to taste, and top with shredded Jack cheese before serving.

HEATH FAMILY (ERICACEAE)

The Heath family contains about one hundred genera and 3,000 species worldwide.

MANZANITA

Arctostaphylos spp.

A view of the sprawling *Arcostaphylos uva-ursi* in fruit BARRY BRECKLING

Use: Berries for beverage, food additive; leaves for medicine
Range: Found in chaparral and on dry hillsides in the ponderosa pine belt. Found from 4,000 to 8,000 feet.
Similarity to toxic species: None
Best time: About September for berries
Status: Relatively widespread

Tools needed: None

PROPERTIES

In Arizona, there are at least four species (not counting subspecies) of *Arctostaphylos* that we refer to as some sort of manzanita. All are native. They typically have characteristic dark red or maroon-colored bark, often with a shredded look. They have the appearance of small trees or bushes. At least one (*A. uva-ursi*) is vining.

The leaves are alternate, evergreen, generally round-to ovate-shaped, a bit leathery, and stiff. The flowers are like little white lanterns or urns that hang from the plant, and the flower parts are usually in fives. The flowers mature into the round reddish fruits; they actually vary slightly in color from an orange-yellow to a darker maroon color. Some have a very sticky surface, and some are very dry on the surface.

The kinnikinnick plant ALGIE AU

A view of an *Arcostaphylos* bush BOB SHUMAN

The manzanita bush in fruit

They can be found in a broad array of environments: rocky slopes, upper chaparral, throughout parts of the desert, in woodlands, and so on.

USES

Found at the north rim of the Grand Canyon, and throughout the state, Native Americans made many uses of these fruits.

Though the manzanita berries are only available seasonally, generally peaking around September, sometimes they are found in abundance and can also be dried for later use.

There are some species whose berries are sticky on the surface, and others that are not. I prefer those that are not sticky because less dirt sticks to them, and less cleaning is needed.

There are several ways to enjoy the manzanita berries. The ripened berries can simply be brewed in warm water to make a pleasant lemonade-

like drink. While there's sugar content, it's sour, too, and you can enjoy this drink hot or cold—while sitting around the campfire, or with a few fruits in your canteen for a trail drink.

Traditionally, the mature and dried berries would be gently ground on a rock or in something like a *molcajete* (traditional Mexican stone grinding bowl). The flour, strained from the seeds, can then be used in many ways: added to other bread products (like acorn flour) as an emulsifier or smoothener, added to various batters, or just added to water for a drink.

The seeds can be boiled for a strong vinegar-flavored liquid. You can use this as a substitute vinegar for your salad dressings or dilute it with water and sweeten it for a good wild lemonade.

Kinnikinnick was an old-time smoking mix made from one of the desert manzanitas. I've used many of the leaves this way, just drying and then crumbling them fine. They smoke well, have a decent aroma, and there's no harmful side effect as with tobacco.

An old-time use is to make an infusion from the leaves and drink it to cure poison oak rash. Though I have never had to try this, I have heard some firsthand reports that this worked quickly and effectively.

A view of manzanita leaves

LEGUME FAMILY (FABACEAE)

This is a big family worldwide, with about 730 genera and 19,400 species.

ACACIA

Acacia spp.

A view of the leaf and branch of catclaw acacia

Use: Seeds for food; leaves for medicinal tea
Range: Planted commonly in the urban areas; escaped in local fields, parks, chaparral
Similarity to toxic species: Because there are several toxic members of the Pea family, be sure you've properly identified acacia pods and seeds.

Best time: Seeds mature in early summer.
Status: Common locally
Tools needed: None

PROPERTIES

The *Acacia* genus includes about 960 species worldwide, with six species in Arizona. Some are native, and some are Australian. The native catclaw plant had formerly been classified an *Acacia* but has been recently reclassified by botanists as a *Senegalia greggii*.

Various acacia shrubs and trees are typically planted as park, street, and yard trees; many are found only in the wild.

The leaf and pod of catclaw acacia

The tree’s leaves are bipinnately divided, giving the tree an overall ferny look. The bright yellow flowers appear to form balls or globes and make the tree very conspicuous when in flower. In the summer, the flat pods can be seen hanging from the trees. Small black seeds fall to the ground as the pods mature.

USES

Among the Cahuilla, the pods of the catclaw acacia were ground into a flour and made into flour for porridge or cakes. Many of the indigenous groups of Arizona used these pods for food, some even using them for animal food. At least one group regarded these as “starvation food,” meaning that they would only use these pods if no other food was available.

Swiss Army knife and seeds for size camparison

Not widely known is that the seeds from the pods of the Australian species were good food back home in Australia. The Aboriginal people considered the larger seeds, which they called *mulga*, a great source of food. Mulga seeds are at least as large as a green pea, maybe a bit larger. The mature seeds would be dried and ground into a flour that could be used in a variety of ways; one traditional way was to add water and form a large pancake, which was cooked right on the coals of a campfire. Such a pancake is known as “damper,” and so mulga damper was a regular staple back in old Australia.

Seeds of the catclaw acacia

Unfortunately, we don’t have the larger mulga seeds in Arizona. Among others, we have the black wattle acacia, also sometimes called silver wattle (*A. deal-bata*), which is somewhat common as a gone-wild park tree in some parts. We have collected these smaller seeds off the ground and by picking the mature pods from the tree. Once a sufficient volume of the seeds was collected, we ground them in a *molcajete* until we had flour. We blended the flour with additional wheat flour and acorn flour, added water, and formed biscuits. We cooked these by the fire until done, and everyone found them quite delicious.

The leaves are used as a somewhat flavorless tea when a mild astringent is needed, for example, for a sore throat, or the tea can be used as an external wash for sunburns, insect bites, scrapes, abrasions, and other skin irritations.

Besides their food use, the native catclaw acacia’s wood was used for a variety of functions, such as building, basketry, cradle frames, fences,

brushes and brooms, and perhaps other applications.

PALOVERDE

Parkinsonia microphylla and *P. florida*

Paloverde with flowers and pods

Use: Seeds are eaten green, or dried and ground into flour.
Range: Desert; sometimes cultivated
Similarity to toxic species: Some pods or pealike capsules from this family can be toxic. Always make sure you have accurately identified any member of this family that you intend to eat.
Best time: Green pods in early summer; mature pods in late summer to fall
Status: Scattered within its range
Tools needed: None

PROPERTIES

There are eleven or twelve species of *Parkinsonia* worldwide. Three species are found in Arizona, and the two listed here are native.

These plants range from a large shrub to a smallish tree; it is deciduous, with bark that is somewhat green, which is where the name comes from. The alternately arranged, bipinnately divided leaves are long and graceful, giving the plant a very feathery appearance. There are thorns in the leaf axils. The conspicuous flowers are divided into five yellow petals with ten distinct stamens.

The paloverde tree

FORAGER NOTE: Because these trees are both beautiful and drought tolerant, we are seeing more of them in the urban and suburban areas in drought-tolerant landscapes. This provides an opportunity for the urban forager.

It’s a good bee attractor. The multi-seeded pods hang from the trees. One easy way to tell the difference between these two species is that the pod of *P. florida* (blue paloverde) is of an even thickness and sometimes slightly narrowed between the seeds; however, the pods of *P. microphylla* (yellow paloverde) are distinctly narrow between the seeds. The tree is not particularly common but is used more and more for landscaping as it’s drought tolerant and beautiful when it flowers. In the wild, it’s found in the southern deserts of Arizona and down into Baja.

Paloverde pods and seeds. Once all the seeds have been shelled, they can be ground into flour.

USES

The seeds are the prize of this tree. The Cahuilla and Quechan people (among others) ate the whole pods while still green. Once the seedpods were dry and mature, the seeds were removed, and the thin shell was discarded. The very hard seeds were then typically ground into a flour and used as a meal. Generally, the flour from paloverde would be made into a porridge or something like cakes or biscuits. The whole seeds have also been simply parched almost until burned, and then eaten. Some of the tribes sprouted the seeds before eating them.

Leaf and flower of the paloverde

The little seeds are hard when they mature, and you don't just chew on a dry, hard seed. They need to be ground on a rock or *molcajete* into a flour. This contrasts with mesquite, where the entire pod and seed are used, and carob, where the seeds are discarded and the pod is eaten.

Interestingly, this is often referred to as a survival food. When I hear the term "survival food," I think of something that you'd never eat unless you were desperate and starving—things like bark and lichens. Perhaps it is thought of this way because the plant is not all that common and because other tastier seeds were usually available to some of the desert people.

MESQUITE AND SCREWBEAN

Prosopis glandulosa and *P. pubescens*, both natives

A view of the mesquite tree, showing the bark, leaves, flowers, and thorns RICK ADAMS

Use: Pods used for food.
Range: Lower deserts, below 4,500 feet, in plains, hillsides, and along washes
Similarity to toxic species: None
Best time: Pods begin to form in spring and mature in summer.
Status: Widespread within its zone
Tools needed: None

PROPERTIES

There are forty-four species of *Prosopis* worldwide, with three found in Arizona.

Mesquite is very common throughout the low desert; screwbean, a close relative, is not so common. If the plant isn't in flower or fruit, it's somewhat inconspicuous, and you may not have known it was mesquite. The leaf is evenly pinnately divided into smaller round or linear segments, giving the plant a ferny look. There are little spines on the stems, generally two per node.

The mesquite fruits that appear in the summer are pale yellow, dry, and maybe six inches long. They look like slightly withered green beans, except

they are yellow when mature.

Mesquite pods RICK ADAMS

When not in flower or fruit, mesquite and screwbean are very hard to discern. But when in fruit, the screwbean is just as the name implies: a bean that looks like you twisted it. It's somewhat shorter than the mesquite fruit and round in the cross section. It's one big spiral screwed-up bean! (No offense intended.)

USES

The yellow pods of mesquite are the main prize of this desert shrub or tree. They are harvested when ripe, which is typically sometime in the summer. There are a number of ways in which the pods have been used for food over the centuries. Perhaps one of the simplest is just to pick the mature pods, chew it, and spit out the seeds. (The screwbean is used similarly.)

RECIPE

Mesquite Bean Juice Drink, Pima

Pick the yellow, soft beans from the bush in July. Clean them and place them into a large pot and cover with water. Boil until the beans are tender. Let cool in the pot. With a wooden pounder, pound the beans until they are pulpy. Drain through a colander, saving the liquid for the drink. This is an ancient and refreshing drink, attributed to the Pima people and others.

—FROM THE *SOUTHWESTERN INDIAN RECIPE BOOK* COMPILED BY ZORA GETMANSKY HESSE

Closer detail of the thorns and leaves of the mesquite tree RICK ADAMS

Traditionally, the whole pods would be ground into a flour that could be used alone or mixed with other flours to make breads and cakes.

RECIPE

Traditional Mesquite Bean Cake

These rich, molasses-like cakes were used as travel food by Indians, with pieces broken off and eaten or reconstituted in water to make a drink, hot or cold.

I am not a doctor, but I have read that mesquite digests slowly and helps maintain stable blood sugar, important for diabetics. It's also high in protein and fiber. ***Note***: Everything in these recipes must be taken at your own risk. As always, do your research or consult your physician.

Mix ground, whole-bean, dried mesquite flour (I get mine from the Seri Indians) into boiling water, reduce heat, and stir into a thick mush (or atole). Simmer and stir a few minutes longer to tenderize (especially if the flour is coarsely ground) and then blend in additional flour until the mixture thickens and stiffens enough to hold shape. Form into cakes two to four inches in diameter and about a half-inch thick on a cookie sheet or tinfoil and dry in the sun or on rocks near a fire. As an alternative, I generally place them in a preheated oven at 300°F for two hours, until the cakes have dried a bit, then I reduce heat to 150°F or less for three to four hours. Once removed from the oven, I leave them out for even more time to dry more thoroughly. One cup flour makes a large cake for about four.

—RECIPE FROM PAUL CAMPBELL, ANTHROPOLOGIST, AND AUTHOR OF *SURVIVAL SKILLS OF NATIVE CALIFORNIA*

CAROB

Ceratonia siliqua

Use: Ripened pods for food, excluding the seed
Range: Mostly an urban street tree
Similarity to toxic species: None
Best time: Pods ripen in late summer into fall.
Status: Somewhat common
Tools needed: Bags

Carob leaf

PROPERTIES

Carob is from the Middle East, and today, all commercial carob comes from Cyprus. Here in the Southwest, and Arizona, thousands of these trees have been planted as a street and park tree. They get large, nearly as large as an oak, with a large trunk as they mature.

Carob is an evergreen tree with pinnately divided leaves, each leaflet more or less round. In the flowering stage, the tree is very aromatic, and sometimes (once you know the smell), you can detect carob trees while driving down a street.

The pods begin in the spring as thick green pods, approximately six to eight inches long (there are plenty of smaller and larger ones). When the pods mature in summer, they are brown and leathery. Mature pods drop from the trees slowly, so some will be on the tree much of the year.

USES

Mature carob pods are delicious just picked off the tree or ground and eaten. When you pick a fruit, break it open and make sure it is entirely ripe with no green inside. The ones that aren't entirely ripe will be a bit astringent. Clean them and discard any that have been eaten by animals or are already very wormy inside.

The ripe carob pod is probably the closest thing to the ultimate survival food that you're likely ever to find. Rich in natural sugar, palatable, high in the B vitamins for protein, rich in calcium—good for you and tastes good too!

The pods can be eaten raw with no particular preparation besides cleaning, and they will last for years, so you can just fill your pack with carob pods and eat them when you're hungry.

Ripe carob pods

But what if you want some carob milkshakes or carob candy? Well, then you should just go to the store and buy some! It's quite an ordeal to make a carob milkshake with the carob pods, unless you have a way to grind the pods into a very fine meal. Most home processors just won't do it. First, you need to crack open the pods and remove the very hard seeds. Then you grind the pods, usually several times, until you get the finest meal. The best I was ever able to do at home was to get a brownish milk with all the carob meal settling to the bottom of the glass without dissolving. As for carob candy, most of it that you buy is just another junk food to which a bit of carob has been added. However, you can remove the seeds, grind the pods into a flour, and add that sweet flour to cake, bread, cookies, muffins, and even pie fillings. I have seen whole cookbooks describing how to process the mature carob pod into dozens of products.

But at the end of the day, I just like to eat the pods as they are, with seeds removed. They are tasty, nourishing, nutritious, and make a very easy

snack.

CAUTION

Be sure to bite carefully and to spit out the very hard seeds.

Also, when you examine your collected pods, you should discard any that appear moldy, have insect infestation, or show signs that rats or rodents have chewed on them.

OAK FAMILY (FAGACEAE)

The Oak family includes seven genera and about 900 species worldwide. There are at least thirteen species of the genus *Quercus* in Arizona, not including sub-species. Once processed, the nuts of all varieties of acorns can be eaten.

OAK TREE

Quercus spp.

A bowl of collected acorns

Use: Acorns used for food once leached; miscellaneous craft and dye uses.
Range: The oaks of Arizona can be found in nearly every environment, generally above 3,000-foot elevation.

Similarity to toxic species: The tannic acid in acorns is considered toxic, but it’s so bitter that you’d never eat enough to get sick or cause a problem.
Best time: Acorns mature from mid-September to as late as early February.
Status: Common
Tools needed: A bag

PROPERTIES

Some oak trees are deciduous, and some are evergreen, and the leaf shapes vary from simple to pinnately lobed. Some are bushes, but most are massive. To know your local oaks, you should go to an arboretum or a plant society walk. Oak trees are very common. They are ubiquitous.

Angelo C. grinds shelled acorns on the metate.

The fruit of all oak trees is the acorn, which every child can recognize. Some acorns are fat, some long and thin, and the caps can vary significantly. Still, the nut set in a scaly cap is universally recognized as the acorn. You should have no trouble recognizing acorns wherever you live.

USES

The nut from the oak tree is the acorn, and the acorn is a wonderful source of a starchy food. Though I have three separate cookbooks devoted entirely to using acorns in the modern kitchen, I generally only use acorns for cookies, pancakes, and bread.

In the old days, acorns were an important source of food for the indigenous peoples. Acorns were typically collected and dried and then stored. For use, the acorns were shelled, and the shells were discarded. The acorns were ground into a flour and then placed on a sloping rock with a lip at the lower end or some other variation of a colander. Cold or hot water poured over the acorn meal would wash out the tannic acid. The meal was most often used as a thickener in soups and stews, making a type of gravy.

Acorns were such an important food that every tribe had their own way of processing them, so there was a lot of variety in how this would have been done. There was a lot of lore surrounding the types of acorns; the acorn meal sometimes had a religious significance and would have been used in various ceremonies, in much the way that corn or corn pollen is often used.

The availability of acorns to some indigenous tribes was as important in their social development as was agriculture to other cultures. Acorns were a more or less guaranteed food source, and thus, they provided a stable foundation upon which the other aspects of the society could grow. And you didn’t just go collect acorns wherever you wanted. Families controlled the various oak groves, and thus, they controlled the access to the acorns, which represented political power.

Today, on the trail or in the kitchen, the neatest and quickest way to process the acorns is first to shell them, then boil them and change the water repeatedly

A group of students works on shelling and grinding acorns.

After a tea cloth is placed in a metal colander, acorn flour is placed onto the cloth. A student pours water into the raw acorn flour, and the water will leach away the tannic acid.

After the leached acorn flour is mixed half and half with wheat flour, Erik makes pancakes on a hot soapstone.

until they are no longer bitter. At that point, after drying, I prefer to process them through a hand-crank meat grinder to produce a coarse meal. Ground finer, which you can do in a coffee grinder, the meal is perfect for any product calling for flour. I typically mix the acorn flour fifty-fifty with wheat or other flours. This is partly for flavor and partly because acorn flour doesn’t hold together as well as wheat flour, for example.

The more traditional method of processing first involves shelling the acorns, and then grinding them while still raw. I typically do this on a large flat-rock metate. Then, the meal is put into some sort of primitive colander and water (hot or cold) poured through it. There were many possible ways to create a colander in the old days; today, I just put a cotton cloth inside a large colander and pour cold water over the acorns. Cold water helps while to trickle out, and it may require pouring up to three or four gallons of water through the meal before the acorn meal is no longer bitter and can be eaten.

I have had modern acorn products of chips, pound cake, and pasta. They are delicious. If I had to describe the acorn flavor, I would say that products made with acorn have a subtle graham cracker flavor.

How nutritious are acorns? Here are some details from a chart that was published in *Temalpakh: Cahuilla Indian Knowledge and Usage of Plants* by Lowell John Bean and Katherine S. Saubel. Their source was Martin A.

Baumhoff, *Ecological Determinants of Aboriginal California Populations* (Berkeley, CA: University of California Press, 1936, p. 162) as modified by Carl Brandt Wolf, *California Wild Tree Crops* (Claremont, CA: Rancho Santa Ana Botanic Garden, 1945, table 1) and William S. Spencer, *Handbook of Biological Data* (New York: W. B. Saunders Co., 1956, table 156).

Chemical Composition of Hulled Acorns (in percent)

Species	Water	Protein	Fats	Fiber	Carbohydrates	Ash	Total proteins,fats, carbohydrates
Q. lobata	9.0	4.9	5.5	9.5	69.0	2.1	79
Q. garryana	9.0	3.9	4.5	12.0	68.9	1.8	77
Q. douglasii	9.0	5.5	8.1	9.8	65.5	2.1	79
Q. chrysolepsis	9.0	4.1	8.7	12.7	63.5	2.0	76
Q. agrifolia	9.0	6.3	16.8	11.6	54.6	1.8	78
Q. kelloggii	9.0	4.6	18.0	11.4	55.5	1.6	78
Barley	10.1	8.7	1.9	5.7	71.0	2.6	82
Wheat	12.5	12.3	1.8	2.3	69.4	1.7	84

Nutritional and Medicinal properties of acorns (Source: USDA)

Vitamins	Amount	DV
Folate	87.00 mcg	
Folic Acid	0.00 mcg	
Niacin	1.827 mg	9%
Pantothenic Acid	0.715 mg	7%
Riboflavin	0.118 mg	7%
Thiamin	0.112 mg	7%
Vitamin A	39.0 IU	1%
Vitamin A, RAE	2.0 mcg	
Vitamin B12	0.00 mcg	0%
Vitamin B6	0.528 mg	26%
Vitamin C	0.0 mg	0%
Minerals		
Calcium, Ca	41.0 mg	4%
Copper, Cu	0.621 mg	31%
Iron, Fe	0.79 mg	0.79%
Magnesium, Mg	62.0 mg	16%
Manganese, Mn	1.337 mg	67%

Phosphorus, P	79.0 mg	8%
Potassium, K	539.0 mg	11%
Sodium, Na	0.0 mg	0%
Zinc, Zn	0.51 mg	3%

GERANIUM FAMILY (GERANIACEAE)

Worldwide, there are six genera and about 750 species in this family.

FILAREE

Erodium spp.

Filaree with its pointy seed capsules

Use: The leaves are used, raw, cooked, or juiced.

Range: Filaree prefers desert flats, plains, mesas, lawns, fields, cultivated and disturbed soils, and the fringes of the urban wilderness.
Similarity to toxic species: Because filaree superficially resembles a fern, and perhaps a member of the Parsley or Carrot family (when not in flower), make sure you are thoroughly familiar with filaree before eating any.
Best time: Spring
Status: Somewhat common
Tools needed: None

PROPERTIES

There are seventy-four species of *Erodium* worldwide. Three of these species can be found in Arizona.

Filaree is a very common urban weed, found in gardens, grasslands, and fields, and there are varieties that are found in the desert as well. This annual plant is a low-growing rosette of pinnately compound leaves, which are covered with short hairs. The stalk is fleshy. Sometimes people will think they are looking at a fern when they see filaree. The small five-petaled spring flowers are purple, followed by the very characteristic needlelike fruits.

USES

Filaree leaves and stalks can be picked when young and enjoyed in salads. The leaves are a little fibrous but sweet. I pick the entire leaf, including the long stem, for salads or other dishes. They are best chopped up before adding to salads or cooked dishes such as soups or stews.

The plant is quite common and widespread, though the leaves are much smaller when found growing in dry or hard soil.

A view of the filaree leaves RICK ADAMS

You might enjoy simply picking the tender stems and chewing on only them. They are sweet and tasty, somewhat reminiscent of celery. In fact, sometimes in a dry year, I find that the stem part is the only part that I will eat. An older leafy section is drier and more fibrous and lends itself to being added to a stew or other cooked dish.

The filaree flowers RICK ADAMS

In wet seasons, the spring growth of filaree is more succulent and tasty. In dry years, the season will be short, and the leaves and stems of filaree will be less desirable.

RECIPE

If you have a wheatgrass juicer, you can process some of the filaree leaves and then enjoy the sweet green juice.

GOOSEBERRY FAMILY (GROSSULARIACEAE)

This family includes only the *Ribes* genus. There are 120 species worldwide, and ten species are in Arizona. These are found in all environments.

CURRANTS AND GOOSEBERRIES

Ribes spp.

A view of golden currants; note the three-lobed leaves.

Use: The fruits are eaten raw, dried, or cooked/processed into juice, jam, and jelly.
Range: Species are found in the mountains, clearings in the forests, in foothills, along rivers, generally above 5,000 feet in elevation.
Similarity to toxic species: When seeing currants for the first time, some folks think they're looking at poison oak—they've heard the saying "leaflets three, let it be." But the currant has three lobes per leaf, not three distinct leaflets as does poison oak.
Best time: The fruits are available in mid-spring.
Status: Common locally
Tools needed: Container for the fruit

PROPERTIES

Currants and gooseberries are both the same genus, and so we'll treat them together. Both are low shrubs with mostly long vining shoots that arise from the base. The gooseberries have thorns on the stalks and fruits; the currants do not.

Note the dried flower adhering to the fruit, typical of *Ribes*.

The typical leaf shape of the *Ribes*

The leaves look like little three-to five-fingered mittens. The fruits of both currants and gooseberries hang from the stalks, with the withered flower usually adhering to the end of the fruit.

You will find currants or goose-berries throughout the diverse ecosystems of Arizona, mostly at higher elevations.

USES

Though the straight shoots of the currants make excellent arrow shafts, currants and gooseberries are mostly regarded as a great fruit, either eaten as a snack, dried, or cooked into various recipes.

Gooseberries are a bit more work to eat because they’re covered with tiny spines. I have mashed them all together and then strained the pulp through a sieve or fine colander, using it as a jelly for pancakes.

Gary Gonzales, left, and Roman, inspect the ripe currants.

Currants require no preparation, and so they can be picked off the stalks and eaten fresh. But make sure they are ripe; they'll be a bit tart otherwise.

Note the thorns on the gooseberry vine.

In the old days, the currant was a valuable fruit; it was dried, powdered, and added to dried meats as a sugar preservative. Today, you can just dry the fruits into simple trail snacks, or you can collect a lot and make jams, jellies, or even delicious drinks.

And though the currant leaf is not usually regarded as an important food source, some can be eaten in salads or cooked dishes for a bit of vitamin C. They are a bit tough as they get older, however.

Gooseberry vine in flower AL SCHNEIDER

CAUTIONS

Be sure you've identified currant or gooseberry and that you can tell the difference between these and poison oak.

WALNUT FAMILY (JUGLANDACEAE)

The Walnut family contains nine genera and about sixty species worldwide.

ARIZONA WALNUT

Juglans major

Green unripe walnuts. Note the pinnately divided leaves.

Use: The nutmeat is eaten. The green walnuts are used as fish stunner and the black hulls for a dye.
Range: Common along streams and canyons in the upper desert. Also found in grasslands and oak woodlands.
Similarity to toxic species: None
Best time: Nuts mature in mid-to late summer.
Status: Common
Tools needed: Gloves suggested

Ripe walnuts cracked. Note that there is more shell than meat.

PROPERTIES

There are about twenty-two species of *Juglans* worldwide. In Arizona, there is only this species, as well as the introduced English walnut.

The Arizona walnut is widespread in Arizona's canyons, valleys, and hillsides.

This is a full-bodied native deciduous tree with pinnately divided leaves. There are typically nine to thirteen leaflets per leaf.

You know what the English walnut that you buy in the store looks like; this one is similar, but there are some important differences. First, Arizona walnuts are smaller. They have a soft green outer layer, which turns black as

it matures and has long been used as a dye. The shell of the English walnut is thin and easy to crack, but approximately one-half of our Arizona walnut is shell, and it requires a rock or a hammer to crack. The meat in the Arizona walnut is oily and delicious, though there's not as much as you'll find in the cultivated English walnut.

USES

Yes, these are walnuts! But unlike the more commonly cultivated English walnut, these walnuts are more like the hickory nuts of Eastern states.

Arizona walnuts are covered in a fleshy material that dries when the walnuts are mature and fall. This outer black covering is an excellent dye or pigment material for arts and crafts, but you want to consider wearing gloves when collecting.

Once you crack open the walnut, you can pick out the edible meat and eat it as is, or add it to bread products, cookies, cakes, even stews and meat dishes. It is a very tasty, oil-rich food and quite a delicacy, but it just takes a lot of work to get to it.

Also, the immature green walnuts were one of the substances used in the old days to capture fish. In the past, indigenous people used to crush the green walnuts and toss them into pools of water, or the edges of slow-moving streams, and the fish would float to the top. The fish would be scooped out with nets, and then everyone would have dinner!

A mature walnut on the tree

MINT FAMILY (LAMIACEAE)

The Mint family has about 230 genera and about 7,200 species worldwide.

MINT

Mentha spp.

A view of the wild mint plant JEFF MARTIN

Use: As a beverage and medicine
Range: Along rivers and wet areas; often cultivated
Similarity to toxic species: None
Best time: Mint leaves can be collected year-round.
Status: Common locally, in the wild in and near streams
Tools needed: None

PROPERTIES

We have four species of *Mentha* growing wild in Arizona, but you're also likely to encounter many others in gardens and farms. In the wild, mints are typically found along streams. They are sprawling, vining plants with squarish stems and opposite, finely wrinkled leaves. Crush the leaf for the unmistakable clue to identification. If you have a good sense of smell, you'll detect the obvious minty aroma.

Common mints such as peppermint, pennyroyal, spearmint, and others are found in Arizona but usually cultivated in gardens. They sometimes escape cultivation and are found in marsh areas, moist areas, ditches, around lakes, and in meadows.

The white, pink, or violet flowers are clustered in tight groups along the stalk, often appearing like balls on the stems.

The flowers, though five-petaled, consist of an upper two-lobed section and a lower three-lobed section.

USES

Not primarily a food, the wild mints are excellent sources for an infused tea. Put your fresh leaves into your cup or pot, boil your water, and then pour the water over the leaves. Cover the cup and let it steep a bit. I enjoy the infusion plain, but you might prefer to add honey, lemon, or some other flavor.

Mint tea is often considered the tea of choice when you need to soothe the stomach. The mint leaves can also be added to bland, or bitter, medicinal herbs when making a tea in order to improve the flavor.

We've had some campouts where we had very little food and relied on fishing and foraged food. Even in off-seasons in the mountains, we were able to find wild mint and make a refreshing tea. The aroma is invigorating and helps to open the sinuses. To me, the flavor and taste of mint tea seem even more enjoyable when camping. Also, you can just crush some fresh leaves and add them to your canteen while hiking. It makes a great cold trail beverage and requires no sweeteners.

Sometimes, we add the fresh leaves to trout while it is cooking. It adds a great flavor.

If used sparingly, you can dice up the fresh leaves and add them to salads for a refreshing minty flavor. Of course, they can be diced and added to various dessert dishes, like ice cream, sherbet, and so on. Or you can try

adding a few sprigs of mint to your soups and stews to liven up the flavor. And if you really want to try something special for your doomsday parties, add a little fresh mint to your favorite pouch of MREs.

CHIA

Salvia columbariae

A view of the growing chia plant

A view of the flowering chia plant HELEN W. NYERGES

Use: Primarily, the seeds are used in drinks and other foods.
Range: Prefers the desert flats and sandy washes below 3,500-foot elevation, but can be found in other environments.
Similarity to toxic species: None
Best time: Seeds mature around early July.
Status: Somewhat common locally in a good season
Tools needed: A tight-weave bag

PROPERTIES

Though there are about 900 species of *Salvia* in the world, only fifteen are found in Arizona. Most are native, and generally, they go by some variation of the name “sage.” The leaves of most *Salvias* are prized for spice and

medicine, and the seeds of all are edible. The *Salvias* are also a valuable plant for bees.

Chia prefers desert flats, and that's where you'll find it in the greatest abundance. However, you can also find it in other zones, typically where the soil has been disturbed, and even in higher elevations in the mountains up to about 4,000 feet. It's also relatively easy to cultivate down in the desert plains and in backyards.

A view of the reticulation of the surface of the chia leaf RICK ADAMS

The plant is an obvious mint, with its square stem and opposite leaves that are finely divided and creased. The flower also is a typical mint, with pale-to deep-blue flowers that are formed in whorls (appearing like balls) along the stalk.

The tiny gray to tan seeds mature around July when the seed balls mature and turn tan.

A view of the cultivated “health-food store” chia (left) and the native golden chia seed (right)

USES

The golden chia seeds are legendary in Indian lore and history, first recorded by Dr. J. T. Rothrock, who was both a botanist and surgeon for the Wheeler US Geological Survey in 1875. He wrote that “one tablespoon of these seeds was sufficient to sustain for twenty-four hours an Indian on a forced march.” (He was referring to the runners and traders who could get by on just the chia seeds if they had nothing else.)

In fact, the seeds are an easily digestible form of protein, and—though not everyone agrees with me—I think they taste good, too! I add them to coffee, fruit drinks, and water. I mix them into yogurt, cottage cheese, and sour cream. I toss the seeds in cereals, salads, soups, and omelets. I have even ground them and added them to bread batter and pancake batter. Chia seeds also can be combined with chopped dates and figs and pounded into a high-protein “nutrition bar.”

I was heavily influenced by Harrison Doyle’s book on chia called *Golden Chia: Ancient Indian Energy Food*, learning that the common chia sold in health-food stores is usually not the *Salvia columbariae* seeds used by the desert Indians but rather *S. hispanica*. So even though the health-

food store seeds are good, you'd have to find a wild source of the golden seeds or grow them yourself.

MALLOW FAMILY (MALVACEAE)

The Mallow family includes 266 genera and about 4,025 species worldwide. According to Dr. Leonid Enari, the Mallow family is safe for wild-food experimentation. He cautions, however, that some species may be too fibrous to eat.

MALLOW

Malva neglecta

The mallow plant with a view of the leaves, and flat Mallow seeds round seed clusters

Mallow seeds

Use: Leaves raw, cooked, or dried (for tea); “cheeses” eaten raw or cooked; seeds cooked and eaten like rice.
Range: Urban areas such as fields, disturbed soils, gardens, up to an 8,500-foot elevation
Similarity to toxic species: None
Best time: Spring
Status: Common and widespread
Tools needed: None

PROPERTIES

There are thirty to forty species of *Malva* worldwide. In Arizona, there are three.

The plants resemble geraniums with their rounded leaves. Each leaf’s margin is finely toothed, and there is a cleft to the middle of the leaf to

which the long stem is attached. If you look closely, you'll see a red spot where the stem meets the leaf.

FORAGER NOTE: I remember when I was still in high school trying to learn about mallow. I'd read about it in one of Euell Gibbons's books, and he implied that it grew just about everywhere in North America, but I was pretty certain I'd never seen it. Then one day, my friend Drew Devereux told me that he'd discovered some in our town, and we bicycled across town to a vacant lot next to the freeway. The entire lot was covered in these green mounds that were about two feet high and maybe three feet across; some rose even taller. As we approached, I realized that I'd seen the plant practically everywhere but didn't know it was mallow.

The flowers are small but attractive, composed of five petals, generally colored white to blue, though some could be lilac or pink. These flowers are followed by the round, flat fruits, which gave rise to its other name: "cheeseweed."

These are indeed widespread, mostly in the urban terrain and on the fringes. In the desert and other areas of Arizona, there are other related genera of the Mallow family like the bush mallow (*Malacothamnus sp*.) and the checker mallow (*Sidalcea sp*.).

USES

When you take a raw leaf and chew on it, you will find it a bit mucilaginous. For this reason, it is used to soothe a sore throat. In Mexico, you can find the dried leaf under the Spanish name *malva* at herb stores, sold as a medicine. In this form, it is typically made into an infusion for sore throats and coughs.

Though the entire plant is edible, the stalks and leaf stems tend to be a bit fibrous, so I just use the leaf and discard the stem. These are good added to salads, though they are a bit tough as the only salad ingredient.

The mallow leaf is also good in any cooked dishes—soups, stews, or chopped up fine for omelets and stir-fries.

I have even seen some attempts to substitute the larger mallow leaves for grape leaves in a dolma, which is cooked rice wrapped in a grape leaf. I thought it worked out pretty well.

As this plant flowers and matures, the flat and round seed clusters appear. When still green, these make a good nibble. These green “cheeses” (as they are commonly called) can be added raw to salads, cooked in soups, or even pickled into capers. Once the plant is fully mature and the leaves are drying up, you can collect the now-mature cheeses. The round clusters will break up into individual seeds, which you can winnow and then cook like rice. Though the cooked seeds are a bit bland, they are reminiscent of rice. Because mallow is so very common, it would not be hard to prepare a dish of the mallow seed. To really improve the flavor, try mixing the mallow seeds with quinoa, buckwheat groats, or couscous.

The mallow plant with a view of the leaves

The root of the related marsh mallow (*Althaea officinalis*) was once the source for making the marshmallow, which is now just another junk food. Originally, the roots were boiled until the water was gelatinous. The water

would be whipped to thicken it and then sweetened. You'd then have a spoonful to treat a cough or sore throat. Yes, you can use the common mallow's roots to try this, though it doesn't get quite as thick as the original.

MINER’S LETTUCE FAMILY (MONTIACEAE)

The Miner’s Lettuce family includes twenty-two genera with about 230 species worldwide. Dr. Leonid Enari regarded this as a completely safe family for wild-food experimentation. He taught that all members could be eaten, usually raw but sometimes needing to be steamed or cooked for improved palatability. Dr. Enari also taught that the seeds of most could be harvested and eaten.

MINER’S LETTUCE

Claytonia perfoliata

Flowering miner’s lettuce amid the grass RICK ADAMS

Use: Entire aboveground plant can be eaten raw, boiled, steamed, sautéed, or added to soup, eggs, etc.
Range: Mostly found in moist canyons and around springs from 2,500 feet to 7,500 feet.

Similarity to toxic species: None
Best time: Spring
Status: Common seasonally
Tools needed: None

PROPERTIES

There are twenty-seven species of *Claytonia* worldwide. There are three species found in Arizona, as well as two species of the closely related *Montia*.

Miner's lettuce was one of the very first wild foods that I learned to identify. I'd seen the characteristic leaf—a round, cuplike leaf with the flower stalk growing out of the middle—in Bradford Angier's book *Free for the Eating*. It was just one drawing, but I was certain I'd be able to recognize it. One day I got a phone call from a fellow budding forager, and he told me that he'd spotted the plant about 1,000 feet up an incline in the local mountains. I bicycled to the site that day and climbed up the hillside, and sure enough, I found it!

Miner's lettuce. Note how the flower stalk grows through the round leaf. RICK ADAMS

Very young miner’s lettuce

That night I tried my first miner’s lettuce in salad and boiled some like spinach. It was good, but perhaps the experience was a bit anticlimactic because I was so wrapped up in the lore and history of the plant. I didn’t realize there’d be nothing really incredible about it—just a tasty though somewhat bland leaf that could be used in many ways. Plus, I liked the idea that I was now eating a plant that generation after generation of indigenous people had eaten all throughout Arizona and the surrounding states.

Miner’s lettuce leaves are formed in a rosette, with each leaf arising from the root. The young leaves are linear, and the older ones are somewhat triangular to quadrangular in shape, with some appearing water spotted. The key characteristic is the flowering stalk with its pink or white five-petaled flowers, which arise from a cup-shaped leaf. Clusters of these unique leaves, all arising from a common root, like a head of leaf lettuce, make this a very easy plant to recognize.

USES

It seems that everyone knows miner's lettuce. This is probably because the plant is so distinctive—when it's in flower, you really can't confuse it for something else. Plus, it tastes good, it often grows very abundantly, and it's easy to work with. Think of the plant as a somewhat succulent lettuce that is also good cooked, and you'll get some idea how versatile this plant can be.

Flavor- and texture-wise, this is perhaps one of my favorite wild foods. My brother, Richard, always regarded it as his favorite. We have used it in many recipes—just think of all the diverse ways in which we use common spinach!

To give some examples of the many ways in which we can eat miner's lettuce, consider a weekend survival trip I once led for a dozen young men. Our only food was what we fished or foraged, and there was very little growing in the area besides miner's lettuce and a small amount of mustard. We had miner's lettuce salad, miner's lettuce soup, fried miner's lettuce, boiled miner's lettuce, miner's lettuce cooked with fish, and miner's lettuce broth! If we were in a kitchen with all sorts of condiments, we'd have had miner's lettuce omelets, soufflés, stir-fries, and green drinks.

In other words, in any recipe—raw, cooked, or juiced—that calls for greens, you can use miner's lettuce.

RECIPE

Richard's Salad

4 cups rinsed miner's lettuce leaves

Dressing of equal parts olive oil (cold-pressed) and raw apple cider vinegar, to which he added a dash of garlic powder and paprika, to taste

—RECIPE FROM MY BROTHER, RICHARD, WHO MADE MINER'S LETTUCE SALADS WHENEVER POSSIBLE IN THE SPRING

LOPSEED FAMILY (PHRYMACEAE)

The Lopseed family contains fifteen genera worldwide, with 230 species. In Arizona, *Mimulus* is the only genus representing this family. (*Mimulus* had formerly been classified in the Figwort family.)

YELLOW MONKEY FLOWER, COMMON MIMULUS

Mimulus guttatus

A view of the flower and leaf of the yellow monkey flower LILY JANE TSONG

Yellow monkey flower in bloom LILY JANE TSONG

Use: Everything tender above the waterline
Range: Common mimulus is always found in slow-moving waters or ponds, from elevations of 500 to 9,500 feet.
Similarity to toxic species: None
Best time: Spring
Status: Common in some areas, not particularly widespread
Tools needed: None

PROPERTIES

Members of the *Mimulus* genus are generally referred to as monkey flowers. There are about one hundred species worldwide, and there are fourteen species in Arizona, all of which are natives.

This is a common yellow wildflower that grows along the shallow banks of streams, in much the same environment as watercress. It's usually very conspicuous when in flower and fairly easy to recognize.

The bright yellow flowers are typically on a raceme, with five or so flowers per stalk. The flower is composed of an upper lip with two lobes and a lower lip with three lobes, which also may have many red to brown spots, or just one large spot. The opening to the tubular flower is hairy.

Monkey flower in bloom HELEN W. NYERGES

The plant might be an annual or perennial, with the stems either erect or sprawling in the water. It's a highly variable plant.

The leaves are opposite, round to oval in shape, usually with irregular teeth.

USES

Because the common monkey flower grows in slow-moving waters, make sure that the water is clean if you plan to use it in salads.

Indigenous peoples used the leaves of this plant raw in salads and often in cooked dishes.

I've used the leaves and tender stems in salads many times, and I just pinch off the tender above-water sections. The texture is good, and the flavor is mild, so it makes a good addition to salads, either alone or mixed with a variety of other wild greens for a balanced flavor. Add some

tomatoes and avocado, too. Of course, I nearly always add salad dressing to make it tasty.

The greens also lend themselves well to various cooked dishes. You can simply boil them like spinach, or you can try stir-frying them with other greens and vegetables.

The entire plant of the common monkey flower is mild and can go into any soup or stewpot.

PLANTAIN FAMILY (PLANTAGINACEAE)

The Plantain family has 110 genera and approximately 2,000 species worldwide.

PLANTAIN

Plantago major; P. lanceolata

Broadleaf plantain with seed spikes RICK ADAMS

There are about 250 species of *Plantago* worldwide, with twenty-one found in Arizona.

Use: Young leaves used for food; seeds used for food and medicine.
Range: Prefers lawns, fields, meadows, and wet areas.
Similarity to toxic species: None
Best time: Spring for the leaves; late summer for the seeds
Status: Fairly common
Tools needed: None

PROPERTIES

Plantain is as common an urban weed as dandelion, though not as widely known. It's usually found in lawns and fields but also in wet areas.

All the leaves radiate from the base in a rosette fashion, with the basal leaves typically from about two to six inches in length. *P. lanceolata*'s leaves are narrow, prominently ribbed with parallel veins. *P. major* has broad, glabrous leaves, up to six inches long, roundish or ovate-shaped. Both have leaves covered with soft short hairs.

Student examines the broadleaf plantain.

Narrowleaf plantain

Narrowleaf plantain in flower

Broadleaf plantain in the field

The flowers are formed in spikes (somewhat resembling a miniature cattail flower spike), usually just a few inches long, and on stems that are typically no more than a foot tall. Each greenish flower is composed of four sepals, a small corolla, and four stamens (sometimes two). The flowers are covered by dry, scarious bracts. When the spikes are dry, you can strip off the seeds and winnow them.

Broadleaf plantain in field, some with seed spikes

USES

The young tender leaves of spring are the best to eat; use in salads or as you would spinach. The leaves that have become more fibrous with age need longer cooking, and they are best finely chopped or pureed and cooked in a cream sauce. The leaves have a mild laxative effect.

The seeds can be eaten once cleaned by winnowing. They can be ground into flour and used as you would regular flour or soaked in water (to soften) and then cooked like rice. Once cooked, the seeds are slightly

mucilaginous and bland. They can be eaten plain or flavored with honey, butter, or other seasonings.

Plantain is a vulnerary plant (it promotes healing) and is noted for its styptic, antiseptic, and astringent qualities. Native people used the cooked leaves as a poultice for wounds. Cooked plantain leaves have been used as a direct poultice on boils. Plantain leaf, crushed or chopped and used as a poultice, is perhaps the best herb to use for puncture wounds to the body (knife wound, stepping on a nail, etc.). Early American colonists used plantain on insect and venomous reptile bites and the seeds for expelling worms.

VERONICA (aka SPEEDWELL)

Veronica americana

Veronica arising from a bed of watercress

Use: The entire plant (tender stems and leaves) above the root
Range: Grows in slow-moving waters in the same environment as watercress, up to a 9,500-foot elevation.
Similarity to toxic species: None

Best time: Spring and summer
Status: Somewhat common
Tools needed: None

PROPERTIES

The *Veronica* genus has about 250 species worldwide, eighteen of which are found in Arizona.

Veronica americana is a native and sometimes confused with watercress because they both grow in water. And I admit to the superficial resemblance, but there really are some obvious differences. The veronica has a simple leaf about one to two inches long, whereas the watercress has pinnately divided leaves very much like many of the members of the Mustard family. The watercress has a typical mustard flower formula with the four petals arranged like a cross, and its color is white. But the veronica flower is lavender and asymmetrical with four petals, the upper one being wider than the others.

The veronica plant growing in slow-moving water

USES

If I have no concerns about the water's safety from which I've picked the veronica, I add it to salads. It is not strongly flavored, and you can use the entire plant. Just pinch it off at water level (no need to uproot the plant), rinse it, and then dice it into your salad. No need to pick off just the leaves —eat the entire above-water plant.

The asymmetrical veronica flower RICK ADAMS

Because it’s so bland, you can mix it with stronger-flavored greens in your salad. It goes well with watercress, as well as any of the mustards.

Veronica works well with soup dishes and stir-fries. It never gets strongly bitter, like watercress, and it never really gets fibrous. It’s a mild plant that’s fairly widespread in waterways.

If you live near a waterway where veronica grows, you’ll find that it’s a good plant to use in a variety of dishes where you might otherwise include spinach. Try some gently sautéed with green onions, add some eggs, and make an omelet. Or try a cream soup into which you’ve gently cooked some of the veronica greens.

BUCKWHEAT FAMILY (POLYGONACEAE)

The Buckwheat family has forty-eight genera and about 1,200 species worldwide. Of the 250 known species of genus *Eriogonum* found worldwide, over fifty are found in Arizona.

FLAT-TOP BUCKWHEAT

Eriogonum fasciculatum

White flowers of buckwheat

The flower clusters turn brown as they mature.

Use: Seed heads are used for flour (for pancakes or porridge).
Range: Chaparral zone mostly, fringes of the desert, up to a 4,500-foot elevation
Similarity to toxic species: None
Best time: Harvest the seeds from approximately August through February.
Status: Widespread within its niche
Tools needed: Bucket or bag

PROPERTIES

In certain areas, you will find this buckwheat growing prolifically. The plant forms low bushes with its rosemary-like leaves, though the edges of the flat-top buckwheat are rolled over on the edges. While the leaf is nearly identical in size to rosemary's needlelike leaf, there is none of the sweet fragrance of rosemary. In the spring, the plant sends up flower stalks with flowers formed in what appears to be a ball. The flowers balls are white in

the spring; by summer, the seeds ripen, and the balls turn a shade of chocolate brown.

FORAGER NOTE: While “living off the land” with John Linthurst and my brother Richard in our local childhood mountains, we tried making pure wild buckwheat pancakes by just grinding the wild buckwheat seeds on rocks, adding some water, and trying to fry it. The problem was that the buckwheat does not hold together well, so we just had a lot of chunks of cooked buckwheat in the frying pan. Because we had no other food, we ate it anyway and enjoyed it, laughing about our “pancakes.”

Brown clusters of buckwheat contain the tiny seeds.

A view of the linear buckwheat leaves

Of Arizona's over fifty species of *Eriogonum*, this species of buckwheat is the most abundant in seed, is the most common overall, and contains seeds that are easily harvested.

USES

Buckwheat is an amazing grain. It is abundant in the fall and requires no leaching to produce meal from it. The seed heads are easily harvested in the fall when they are ripe. Just use your hand to pick them off and place in a bucket or bag. Where the plant grows thickly, it is not difficult to collect five gallons of the seed heads in under an hour.

I used to try winnowing out the seeds from the wings surrounding them. This proved to be a lot of work to rub them between the hands to free the seed, and then to gently blow off the chaff. While researching how the early Native Americans processed the buckwheat, I learned that winnowing was

not the norm, so then my processing became a lot easier. I just collect the seed heads, rub them between my hands to produce a coarse meal, pick out the stems, and then mix this fifty-fifty with conventional flours. I use this mix to produce bread, biscuits, pancakes, and cookies.

BOTANICAL NOTE

Flat-top buckwheat is not the same as the commonly cultivated buckwheat (*Fagopyrum esculentum*). They are both, however, in the same Buckwheat family, and each is a member of a different genus. Neither buckwheat is related to wheat, and neither is a grass.

The wild ancestor of the common buckwheat can be traced back to about 4000 BCE, in China's Yunnan Province (southwestern China).

CURLY DOCK

Rumex crispus

Dock leaves, before the plant has begun to flower

Use: Young dock leaves used raw or cooked; seeds harvested and added to various flours; stems used like rhubarb.
Range: Prefers wet areas but can be found along roadsides, in ditches, and in pastures, up to 8,000 feet.
Similarity to toxic species: None
Best time: The leaves are best gathered when young in the spring. Seeds mature in late August and may be available for months.

Status: Common and widespread
Tools needed: None

PROPERTIES

Rumex has between 190 and 200 species worldwide; fifteen are found in Arizona.

Curly dock is a widespread, invasive perennial plant. It is originally from Europe, and though it has many good uses, it is often despised and poisoned because it not only survives well but often takes over entire areas.

The root looks like an orange carrot, and the spring leaves arise directly from the root. The young leaves are long and linear and curved on their margins. The leaves can be over one foot long and pointed.

As the season progresses, the flower stalk arises, and it can reach about four feet, even taller in ideal conditions. Three seeds, each surrounded by a papery sheath, form each unit. They are green at first and then mature to a beautiful chocolate brown.

USES

You can make various dishes from both the leaves and the mature seeds of curly dock. Let’s start with the leaves.

Pick only the very youngest leaves for salad, the smaller ones before the plant has begun to send up its seedstalk. These will be not too tough, and the flavor will be sour, somewhat like the French sorrel. You can just rinse them, dice them, and add them to salads. I’ve had *only* these for salad, with dressing and avocado, and it was good, but only because the leaves were young.

Long linear leaves of curly dock, which could be used for salad or soup
RICK ADAMS

The maturing seedstalk of curly dock

Older leaves are best boiled like spinach, or—ideally with the midrib removed—sautéed with potatoes and onions. You can also add some to soup and stews. The leaves change color and darken a bit upon cooking, and the cooking softens up the tougher older leaves, but you really want to cook the tougher, bitter, and astringent older leaves. All these qualities are reduced somewhat by cooking.

I have seen the brown seed spikes sold in floral supply shops as fall decorations, and they are very attractive. Those little seeds can be stripped off the stalks and then rubbed between your hands to remove the wing from the seed. You don’t have to be too picky here as it can all be used. I blow off the wings, and then mix the seed fifty-fifty with flour for pancakes and

sometimes bread. You could also toss some seed into soup to increase the protein content.

I've seen some folks who go to the trouble of winnowing and then further grinding the seeds in a mill to get a fine flour. I never bother, but some folks prefer the finer flour, which is a bit more versatile than the seeds. For example, a fine flour can be mixed fifty-fifty with wheat, blended, and put through a pasta machine to make a curly dock seed pasta, which tastes really good.

The stems are tart and sour but often make a good nibble. Young stems can be processed and used like rhubarb for pies.

CAUTION

Since curly dock can be a persistent unwanted plant in agricultural areas, herbicides are sometimes used to combat it. Be careful, use common sense, and ask questions before collecting curly dock from agricultural areas.

RECIPE

Curly Dock "Nori" (Vegetable Chips)

Dehydration is a neat way to make some interesting and flavorful ingredients for wild-food dishes. This one is easy to do. You will just need a silicone sheet.

100 grams (about 3.5 ounces) chopped curly dock

1 garlic clove

½ cup water

2 teaspoons soy sauce

¼ teaspoon salt

Blend everything and, using a spatula, spread it on a silicone sheet.

Dehydrate at 160°F until fully dry.

—RECIPE FROM PASCAL BAUDAR

SHEEP SORREL

Rumex acetosella

View of the sheep sorrel plant

Use: The raw leaves are good in salads and can also be added to various cooked dishes.
Range: Found in the higher elevations, often around water, and frequently near disturbed soils and in urban areas, generally from about 4,500 to 8,500 feet.
Similarity to toxic species: None
Best time: Spring to early summer
Status: Can be abundant locally.
Tools needed: None

The sheep sorrel leaf resembles an arrowhead. LOUIS-M. LANDRY

PROPERTIES

Sheep sorrel is native to Europe and Asia.

Sheep sorrel is common and widespread, and the plant is recognized by its characteristic leaves, which are generally basal, lance- to oblong-shaped, with a hastate or sagittate tapered base; in other words, it looks like an elongated arrowhead. When the seedstalk matures, it is brown, reminiscent of the curly dock seedstalk but much smaller. Besides being spread by seed,

the plant is also a perennial that spreads by the growth of its underground rhizomes.

USES

Where the plant is common, you can pinch off many of the small leaves to add to a salad or even to use as the main salad ingredient. I've enjoyed sheep sorrel salads with just avocado and dressing added. The leaves are mildly sour, making a very tangy salad.

The flavor is somewhat similar to the leaves of *Oxalis*, though not as strong. They can be effectively added raw to other foods like tostadas (in place of lettuce) or in sandwiches.

RECIPE

Shiyo's Garden Salad

Rinse a bowlful of young sheep sorrel leaves. Add at least one ripe avocado and one ripe tomato, both diced. Add some oil-and-vinegar dressing; my preference is Dr. Bronner's. Eat it outside where the wind can blow your hair.

Collecting some of the young leaves for lunch

They add a bit of a tang when added to soups and stews and can be very effective at livening up some MREs.

WILD RHUBARB

Rumex hymenosepalus

A view of the wild rhubarb plant in a desert plain

Use: The youngest leaves and stems are used in salads, older leaves can be cooked, and stems used like rhubarb.
Range: Found in low valleys, sandy washes, fields, and foothill regions
Similarity to toxic species: None
Best time: Spring
Status: Not widespread; appears singly or in patches.
Tools needed: None

PROPERTIES

This plant is also known as “canaigre.” Though this plant seems largely to be restricted to the deserts, it does grow outside this zone on occasion. If you know curly dock (*Rumex crispus*), which is actually found worldwide, you will automatically assume you’re looking at curly dock when you see the wild rhubarb for the first time. But the wild rhubarb doesn’t just spread

its seed and grow *everywhere*, as does the dock; you will typically find patches of the wild rhubarb here and there. Sometimes you'll encounter isolated patches.

The leaves look similar to the wavy leaf of curly dock, but they are not as linear as the dock. Wild rhubarb leaves are wavy on the margins, but they are more of a dull green color, and the width might be half the overall length of the leaf (where a curly dock leaf might be five or six times as long as it is wide).

Wild rhubarb as it begins to send up its flower stalk

The stems are stout and succulent, and the mature flower spikes resemble the flower spikes of curly dock, though they are not as tall as the curly dock spike.

USES

In general, you can think of the uses of wild rhubarb as the same as curly dock's, but the wild rhubarb generally contains more oxalic acid. This means it's sourer and bitterer and thus requires more cooking to make it palatable.

You might disregard this altogether, thinking it's too much work, but in some parts of the desert, this is one of the few common plants that you can use to make a meal.

Gently boil the stems and the leaves (separately or together) and change the water. When they are no longer too bitter and are palatable, you can use them in soups, stews, sautéed dishes, or simply served with butter, cheese, or other seasonings.

I've had "rhubarb" pie made with just the stems of this plant and liked it more than garden rhubarb. But just like with garden rhubarb, cooks usually add way too much sugar to make rhubarb pie. Health-oriented cooks can tweak the recipe just so and use honey to create an excellent healthful pie. By the way, it makes a green pie, not a red pie like garden rhubarb.

The seeds could also be collected when mature, ground, and added to soup or pancake batter, as you could also do with the seeds of curly dock. Try it sparingly at first, as the seeds are a bit stronger in flavor than curly dock seeds.

PURSLANE FAMILY (PORTULACACEAE)

The Purslane family has recently been redefined by botanists as having only one genus, with about one hundred species worldwide, and six members of that genus are found in Arizona. This family (which once had many more members—now classified in the Miner's Lettuce family) was considered by Dr. Leonid Enari to be entirely safe for consumption.

PURSLANE

Portulaca oleraceae

Note the red-tinted stem and paddle-shaped leaves of purslane. RICK ADAMS

Use: Entire aboveground plant can be used raw, cooked, pickled, etc.
Range: Prefers disturbed soils of gardens and rose beds; also found in the sandy areas around rivers.
Similarity to toxic species: Somewhat resembles prostrate spurge; however, spurge lacks the succulence of purslane. Also, when you break the stem of spurge, a white milky sap appears.
Best time: Spring into summer
Status: Relatively common
Tools needed: None

PROPERTIES

Purslane starts appearing a bit later than most of the spring greens, typically by June or July. It is a very common annual in gardens and farms, pastures, mountain slopes, and meadows, in both Northern and Southern Arizona, from low elevations up to about 8,500 feet.

Young purslane

The stems are succulent, red-colored, and round in cross section. The stems sprawl outward from the roots, rosette-like, with the stems lying on the ground. The leaves are paddle shaped. The little yellow flower is five-petaled.

USES

The sprawling purslane plant

When you chew on a fresh stem or leaf of purslane, you'll find it mildly sour and a bit crunchy. It's really a great snack, though I like it a lot in salads. Just rinse to get all the dirt off, dice, add some dressing, and serve. Yes, add tomatoes and avocado if you have any.

Add it to sandwiches, tostadas, even on the edges of your chiles rellenos and huevos rancheros. I've also eaten it fried, boiled, baked (in egg dishes), and probably other ways, too. It's versatile, tasty, crisp. It really goes with anything, and it's very nutritious.

If you take the thick stems, clean off the leaves, and cut them into sections of about four inches, you can make purslane pickles. There are many ways to make pickles; my way is to simply fill the jar with the purslane stems, add raw apple cider vinegar, and let it sit for a few weeks. (I refrigerate it.)

MEDICINAL PROPERTIES

According to researchers, purslane is one of the richest plant sources of omega-3 fatty acids. That means that not only is it good, but it's also good for you!

RECIPE

Purslane Salsa

2 cups chopped tomatoes

2½ cups chopped foraged purslane

¾ cup chopped onions

3 garlic cloves

1 cup raw apple cider vinegar

¼ cup sugar

1 large California bay leaf

Salt and pepper to taste

½ cup chopped cilantro and some herbs from the garden (such as thyme)

Place all ingredients, except cilantro and other herbs, into a pot, bring to a boil, then simmer to the desired consistency (light or chunky). Add cilantro and other herbs.

Pour into jars, close the lids, and place in the fridge. It should be good for at least a month.

—RECIPE FROM PASCAL BAUDAR

BUCKTHORN FAMILY (RHAMNACEAE)

There are fifty to fifty-two genera of the Buckthorn family worldwide, with about 950 species.

CALIFORNIA COFFEEBERRY

Frangula californica and *F. betulifolia*
[formerly *Rhamnus californica*, also known as California buckthorn]

Coffeeberry with immature fruits

Use: Seeds used for a beverage; bark for laxative.
Range: Canyons, ponderosa pine forests, mountainsides, from 3,500 to 6,500 feet.
Similarity to toxic species: None
Best time: Fruits mature in August and September.
Status: Scattered widely

Tools needed: None

Fruits ripening

PROPERTIES

There are fifty species of the *Frangula* genus worldwide, with three species found in Arizona.

These are small shrubs to large trees, depending on location and species. *F. californica* is typically no more than ten feet tall, whereas *F. betulifolia* is a few feet shorter, generally.

The leaves are alternately arranged, one to two inches in length, typically bright green, narrowly oblong with tiny teeth on the margins. The fruits are green and turn red, then nearly black as they mature. They are little globes up to a half-inch in diameter, with two and sometimes three seeds. The seeds closely resemble the seeds of commercial coffee.

The ripe fruits of coffeeberry

USES

You could pick a few of the nearly black ripe fruits around August and eat them as trail nibble, but don't eat too many. The plant is a known laxative, and the ripe fruit can have that effect.

I have had some jam prepared from the ripe flesh of the coffeeberry fruits. It was uniquely flavored; it didn't appeal to me, but some folks really love it.

Most of the time, it is the seeds of this plant that foragers collect. Harvest the fruit when mature. You could quickly squeeze the seeds out of each fruit—that's the long way. You could also just mush them all up between your hands to get all the fruit separated from the seed, wash it well, and then lay it in the sun to dry. When dry, you can further rub the seeds between the hands to get rid of all remaining flesh.

The seeds are then dried, ground, roasted, and percolated to make a caffeine-free coffee-tasting beverage. It really smells like coffee and more or less tastes like coffee. Serve it plain, or with honey and cream, as with regular coffee. You could also use it as a coffee extender, mixing half-and-half with coffee.

Sarah Shin collects a ripe coffeeberry fruit.

Picking a ripe coffeeberry fruit

“Coffee” made from the coffeeberry seeds

CAUTION

Try this beverage sparingly at first; a small percentage of people will vomit after trying it.

ROSE FAMILY (ROSACEAE)

The Rose family contains 110 genera and 3,000 species worldwide.

COMMON CHOKECHERRY

Prunus virginiana

Chokecherry blossoms BOB KRUMM

Fruit of *Prunus virginiana*, chokecherry BOB KRUMM

Use: The flesh of the fruit in jams and jellies; process the meat of the large seed into a flour.
Range: Chaparral, roadsides, riparian, forest clearings, and urban fringes, from about 4,500 to 8,000 feet.
Similarity to toxic species: None
Best time: Fruits mature around August.
Status: Common
Tools needed: None

PROPERTIES

There are about 400 species of *Prunus* worldwide, whose common names generally include cherry, almond, apricot, and plum. In Arizona, there are seven species of *Prunus* (though we're mostly concerned with the cherries

here). With our common chokecherry (*P. virginiana*), there are two varieties: *demissa* and *melanocarpa*.

One way to identify the plant is to crush these leaves, wait a few seconds, and then smell them. They will have a distinct aroma of bitter almond extract, your clue that the leaf contains cyanide (hydrocyanic acid).

A wild cherry leaf LOUIS-M. LANDRY

The fruit of wild cherry LOUIS-M. LANDRY

The fruits are very much like cultivated cherries, except the color is darker red, almost maroon, sometimes even darker. The color of the fruit can range from bright red to nearly black. The flesh layer can be very thin in dry years and thicker in the seasons following a good rain. Like domestic cherries, under the flesh, there is a thin shell and the meaty inside of the seed.

USES

The fruit of our chokecherries makes a great trail nibble. They typically ripen in August when the trail is hot and dry, and the fruit makes a refreshing treat. But don’t eat too many of the raw fruit, or diarrhea could result.

The wild cherry has a hint of bitterness. The fruit can be cooked off the seeds and the pulp made into jellies, jams, and preserves. You can also

make a fruit leather by laying the pulp on a cookie sheet and drying it.

In the old days, the Native people enjoyed the flesh of the chokecherry, but they considered the seed to be the more valuable part of the fruit. The seeds were shelled, and the inside meat was cooked and leached to reduce the cyanide. The cooked seeds, once ground into mush or meal, were then used by many Native peoples to make a sweetbread product or added (like acorns) to stews as a gravy or thickening agent.

Considering that at least half of the bulk of the collected fruit is the seed, you should at least try processing the seed if you've collected a reasonable volume of the fruit. I wash the seed, let it dry, and then shell them. We boil through at least three changes of water—this takes about twenty minutes—and then we eat it as is, or grind it to a mush on a metate. Typically, we add the cherry seed mush to acorn flour to make pancakes. The cherry seeds give the acorn pancakes a sweet, almondy flavor.

CAUTION

If you crush the leaf, it will impart a sweet aroma like bitter almond extract used in cooking. That's the telltale aroma of the cyanide, so don't use the leaf for tea.

WILD ROSE

Rosa spp.

Use: Fruits eaten raw, cooked, made into jam or tea; wood useful for arrow shafts.
Range: Typically riparian but found in many areas; cultivated roses are common in urban areas.
Similarity to toxic species: None
Best time: Fruits mature in summer.
Status: Common
Tools needed: Clippers, possibly gloves

PROPERTIES

There are about one hundred species of *Rosa* worldwide, which hybridize freely. There are three species in Arizona, not including subspecies.

Wild roses are more common than most people think. They are typically found in wet areas, though this is not a fast rule. The wild rose flowers are

five-petaled, not the multiple-petaled flowers that you find on the hybridized roses. After the flowers mature and fade, the fruit, called the hip, develops; usually, it is bright orange and smaller than a grape.

Rose flower and hip

The leaves are oddly divided into three, five, or seven leaflets, and the stalks are covered in thorns. If you've ever had rosebushes in your yard, you have a pretty good idea of what the wild rose looks like.

The wild rose often grows in dense thickets. If it gets cut down, or after a burn, there will be many straight shoots in the new growth.

Some mature “hips,” fruits of the rose

USES

For food, we have the flower and the fruits. The flowers have long been used to make rose water and can also be used to make a mild-flavored infusion. The petals make a flavorful, colorful, and nutritious garnish to soups and salads

Wild rose flower RICK ADAMS

The rose hips are one of the richest sources of vitamin C. The fruits can be eaten fresh, but you first should split them open and scrape out the fibrous insides. The fruit is typically a bit fibrous, with a hint of bitterness. More commonly, the fruits can be infused into a tea or made into jellies.

Shoots of the wild rose plants

Some of the old-school archers (such as Alton “Longbow” Safford) consider the rose shaft one of the finest woods to use for making arrows, assuming you cut the new, straight shoots. To remove the thorns, you need to then ream the shaft through a rock with a hole in it.

CAUTION

Before you eat the petals or fruit, make sure the plants have not been sprayed with any pesticides.

RASPBERRY, THIMBLEBERRY, BLACKBERRY

Rubus spp.

Use: Berries used for juices, jams, dessert; dried leaves used for medicine.
Range: Riparian and many other areas where sufficient water is supplied; generally found from 5,000- to 9,000-foot elevation.

The vines of a *Rubus* HELEN W.NYERGES

Similarity to toxic species: Somewhat resembles poison oak, though poison oak lacks thorns.
Best time: Fruits mature in the summer.
Status: Common

Tools needed: None, but clippers can help.

PROPERTIES

There are about 400 to 750 species of *Rubus* worldwide. There are six in Arizona.

A *Rubus* in flower

Even nonbotanists can usually identify the vine and fruit of this very common vine. In some areas, wild raspberries are so common that many just go uneaten.

The leaves are palmately divided (like a hand) into three, five, or seven segments. The vines are twining on the ground or over low hedges and are characterized by their thorns, which make it difficult to wade too deep into any of the old hedge-like stands of wild raspberries.

The fruit of the *Rubus* vine

The white, five-petaled flowers are followed by the aggregate fruits, which are a collection of sweet drupelets, with the fruit separating from the flower stalk to form a somewhat hollow, thimble-like shape. Most people instantly recognize this fruit by its characteristic shape because they've seen it in the supermarket or in the backyard garden.

USES

A raspberry is easily recognized, and everyone who sees the ripe ones ventures to eat them. I've picked them deep in the mountains and along roadsides. The key is to avoid the thorns and to make sure they are not immature and tart. If the fruit is black, soft, and easily picked, it's ripe! You can eat it right away, or pick a bunch and mash them for a topping for pancakes, biscuits, or cake. Even better, add them to vanilla ice cream. (Yes,

we know that chocolate ice cream is better for you, but the flavor of raspberries clashes a bit with chocolate.)

You could also make a conserve, a jam, a jelly, a pie filling, or a juice. It's very versatile. And though I rarely have these ripe berries around long enough to dry them, they can be dried in any food dryer and will keep for quite a while. The dried fruits can then be eaten as is or reconstituted for juices or desserts.

An infusion of the leaves has long been used among Native Americans for diarrhea and childbirth pains.

SERVICEBERRY (UTAH SERVICEBERRY, JUNEBERRY)

Amelanchier utahensis

The *Amelanchier* genus consists of about twenty-five species, found all over North America. At least two are found in Arizona.

Use: Edible berries
Range: Rocky slopes in woodlands and ponderosa pine forests, from 2,000 to 7,500 feet.
Similarity to toxic species: None
Best time: Late summer and fall
Status: Somewhat common
Tools needed: Collecting basket

Serviceberry leaf and fruit JOHN DOYEN

PROPERTIES

Serviceberry is a large shrub or small tree with deciduous leaves, often forming in dense thickets.

The twigs of this native are glabrous, and the leaf is elliptical to round, with obvious serrations, generally serrated above the middle of the leaf. The flowers are five-petaled, white, fragrant, and in clusters of a few too many. The fruit is a pome of two to five papery segments, berrylike, generally spherical, bluish-black to purple in color, with a waxy outer skin. Each fruit contains two seeds. The shape somewhat resembles a tiny pomegranate.

A view of the ripe fruit LOUIS-M. LANDRY

USES

The ripe fruits are good to eat raw, dried, or prepared into jams. Fruits of several species of *Amelanchier* were used for food by various indigenous groups, and all members of this genus are edible. Fruits ripen in late spring and into the summer.

Native peoples ate these fruits fresh, or they dried them for later use. The ripe berries were mashed with water into a paste by some indigenous people and then eaten fresh. Several of the western tribes were known to dry these fruits and then shape them into loaves for future use.

The berries remain sweet when dried and could be reconstituted later when added to water. In some cases, this would be served as a sweet soup. With sugar and flour added, these fruits have been made into a pudding. The fruit can be dried, ground, and used in a pemmican mix.

STRAWBERRY (FRAGARIA VESCA and F. VIRGINIANA)

Fragaria spp.

Ground cover of wild strawberry

Fragaria contains twenty species worldwide, with two species found wild in Arizona, not including varieties or subspecies.

Use: Edible berries; leaves for tea
Range: Found in coniferous forests, from 7,000 to 11,000 feet.
Similarity to toxic species: None
Best time: Spring and summer
Status: Widespread
Tools needed: Collecting basket

Fruit of wild strawberry (*F. vesca*) DR. AMADEJ TRNKOCZY

PROPERTIES

If you've grown strawberries in your yard, you will recognize these two wild strawberries.

The bracted strawberry (*F. vesca*) is found in partial shade in the coniferous forests of Arizona. The receptacle is about five to ten millimeters; the leaf petiole is generally three to twenty-five centimeters.

The mountain strawberry (*F. virginiana*) is found in the higher elevations in meadows and forest clearings. The receptacle is more or less about ten millimeters; the leaf petiole is generally one to twenty-five centimeters.

The leaves of both strawberries are all basal, generally three-lobed, with each leaflet having fine teeth. They look just the strawberries you grow in your garden but smaller.

Technically, the strawberry berry is an aggregate accessory fruit, meaning that the fleshy part is derived not from the plant's ovaries but instead from the receptacle that holds the ovaries. In other words, what we call the "fruit" (because, obviously, it looks like a fruit) is the receptacle, and all the little seeds on the outside of the "fruit" are technically referred to as achenes, actually the ovaries of the flower, with a seed inside it.

FORAGER NOTE: Strawberry leaf tea (made by infusion), though not strongly flavored, is popular in many circles. It is high in vitamin C and generally used as you'd use blackberry leaf or raspberry leaf tea. It's a mild diuretic and has astringent properties, and it is regarded as a tonic for the female reproductive system. When made stronger, the tea is said to be good for hay fever.

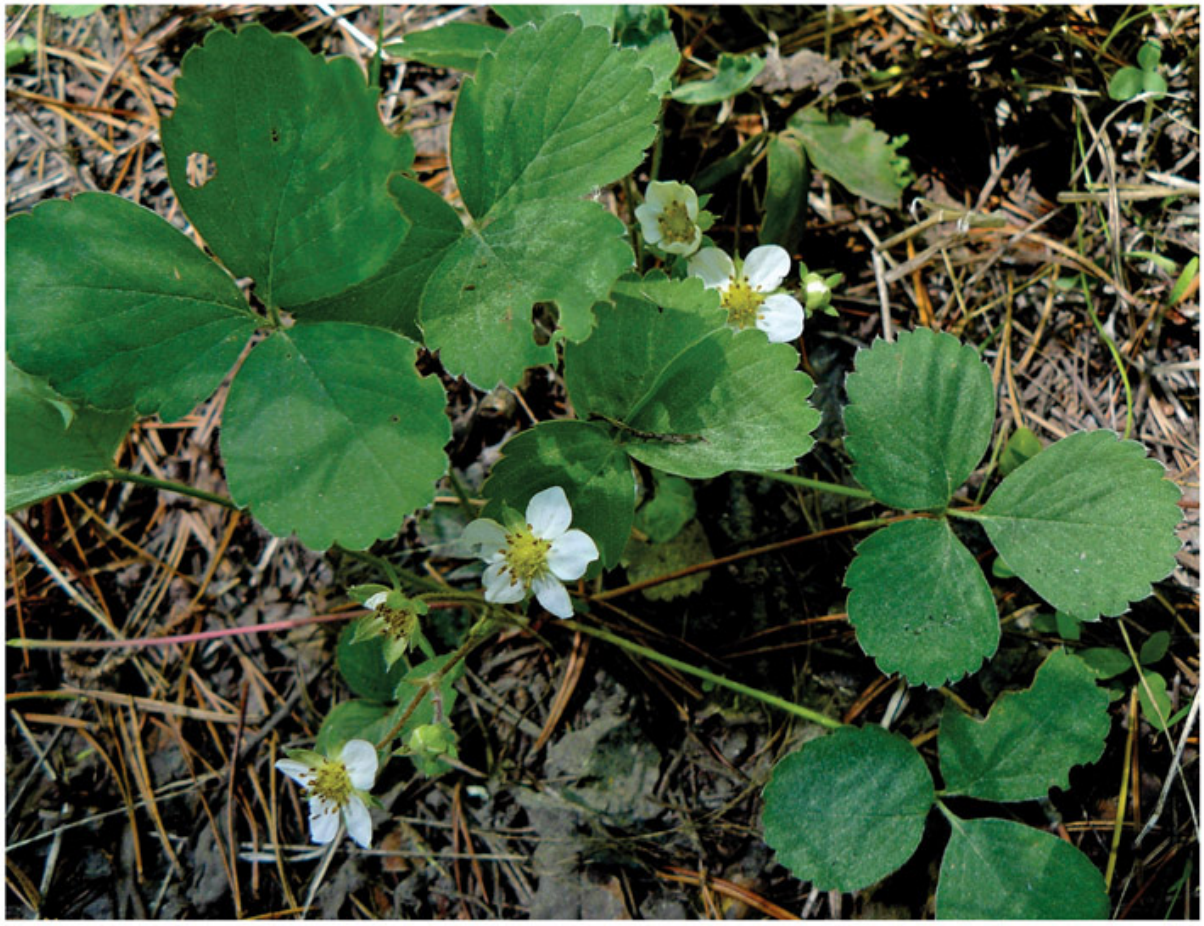
Wild strawberries are easy to identify. When the average person sees one, especially if it's summer and the plant is in fruit, he or she will typically say, "Hey, look, isn't that a wild strawberry?" Strawberries are so widely known that just about everyone recognizes them when they see them, even though the wild varieties are significantly smaller than the huge ones that can be found in markets. Cultivated strawberries can get to be about two—even up to three—inches long. That's huge! By contrast, a wild strawberry is between a quarter-inch to a half-inch long. A half-inch wild strawberry is a big one!

Though they may be smaller, the wild strawberries are typically sweeter, firmer, and tastier than cultivated varieties. Yes, it may take longer to collect them, but you'll find that it's worth it.

USES

You use wild strawberries in every way that you'd use cultivated strawberries. Eat them as is, dry them, make them into jams and jellies, put them on top of ice cream and pancakes, and so on.

From Alaska and throughout the West nearly to the Mexican border, wherever strawberries grow, Native peoples nearly all ate these fruit. Typically, these were eaten fresh.



Wild strawberry flowers and leaves JEAN PAWEK

WILLOW FAMILY (SALICACEAE)

The Willow family contains shrubs or trees, and it includes only the genus *Populus* (all poplar, cottonwood, and aspen trees) and the genus *Salix* (all willow trees). The family contains about 340 species worldwide, typically growing near water, and often cultivated.

WILLOW

Salix spp.

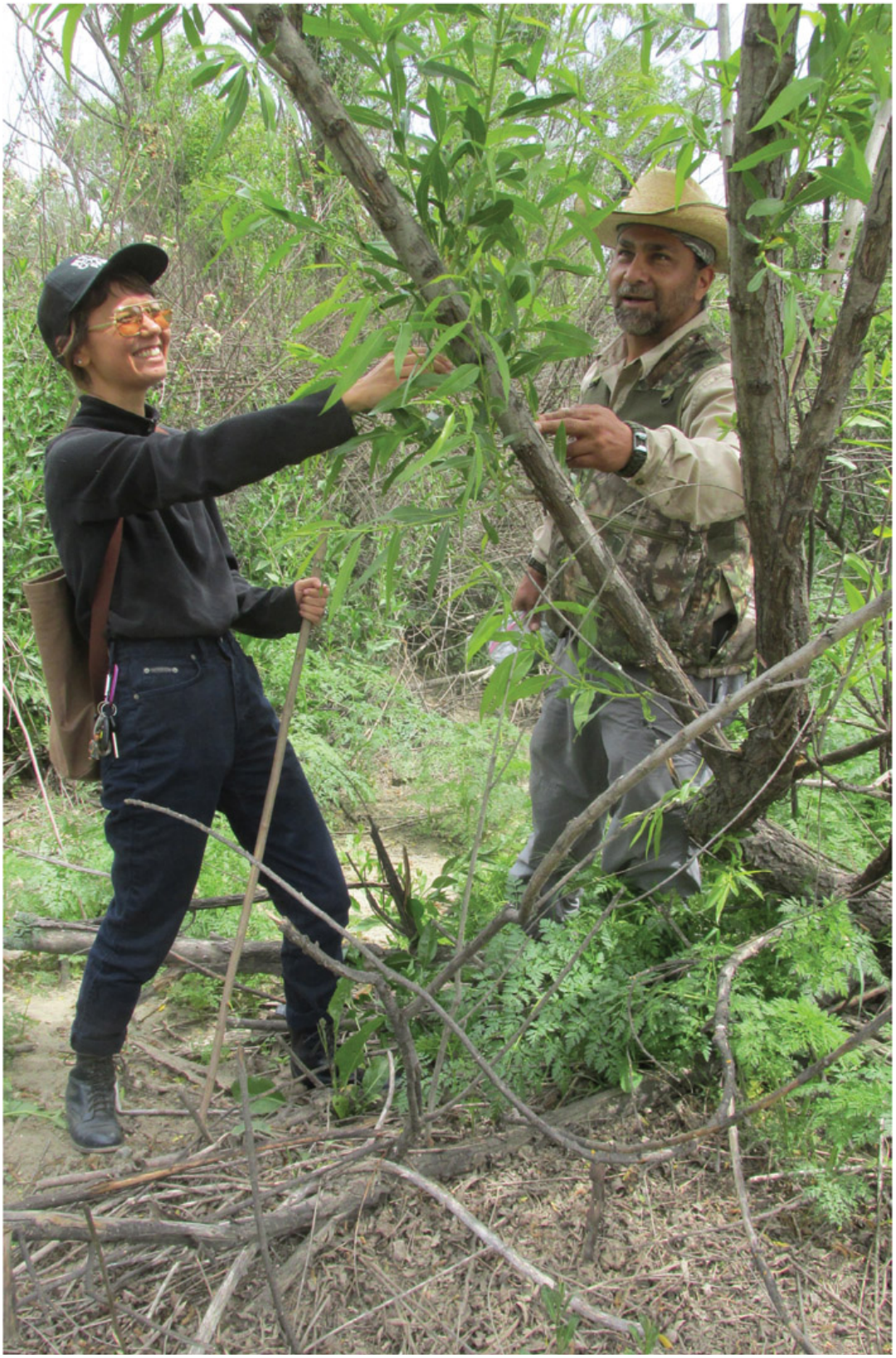
The willow catkins

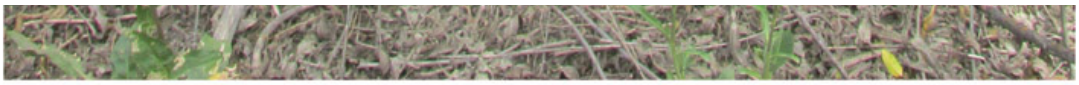
A view of the buds at the base of each leaf

There are approximately 400 species of *Salix* worldwide, and at least sixteen of those species are found in Arizona.

Use: Bark for medicine; cotton for tinder and insulation; wood for tools and shelters
Range: Along streams, around lakes, and in wet areas. Different species can be found from up to 9,500 feet.
Similarity to toxic species: Linear leaves might be confused for oleander.
Best time: Year-round
Status: Common
Tools needed: Clippers

A willow tree





Two students examining a willow branch

Peeling the willow bark for medicine

PROPERTIES

Willows grow where there is water, along streams and around lakes. Some species can be found up to 11,000 feet. They are shrubs to trees.

Angelo Cervera tastes the somewhat bitter inner bark of willow.

The leaves are mostly linear, often lighter on the bottom. The flowers are formed in catkins, which develop into the seeds attached to cottony fluff that allows them to move along in the wind. This white fluff is often abundant at the end of summer when the seeds are maturing.

USES

Willow has many uses and was more valuable in the old days than today. Though some Native people consumed the young leaves, this was mostly done when not much else was available. The plant is mostly a medicinal plant and a source of material for tools, insulation, and fire.

Since willow contains salicylic acid, which is the active ingredient in aspirin, the plant can be used to make a pain reliever. The inner bark of any *Salix* species contains the most salicylic acid, so to make a pain reliever, first remove the bark from a branch. It's impractical to remove the inner from the outer bark, so all the bark can be used. For headaches, toothaches, or other pains, use the equivalent of about two tablespoons of the bark to about two cups of water. Gently boil in a covered pot, and then drink. Those who cannot drink regular aspirin—sometimes it causes stomachaches—can usually drink willow tea without discomfort.

The fluff of the seeds makes a good tinder or insulation.

All parts of the bow and drill (for making fire) can be made from willow wood.

The cottony fluff of the willow is an ideal fire-starting material. A spark can be directed into a pile of the cotton, and it will explode in flame. The cottony fluff can also be pressed onto a wound to stop the bleeding, if the wound is not too severe.

The long, straight branches of any willow can be cut, dried, and then carved into a variety of camp products, such as the bow-and-drill method for fire-making. I use willow for the hearth and drill for this method, though typically, I use other woods for the bow and a bone or rock for the

handhold. The wood of willow can also be used for making the drill and hearth for the hand drill.

Peeling the bark from a willow stave in preparation for making an archery bow

The long, straight branches of various willow are light and easily carved and have a long history of being used for deadfall trigger, pipe stems (once hollowed), quail traps, and even shelters, such as lean-tos or the larger half-dome shelters employed by various indigenous peoples in the past.

Willow bark has also been dried and shredded and added to tobacco mixes, or to nontobacco smoking mixes, such as kinnikinnick.

A group of students who made simple selfbows from willow staves

JOJOBA FAMILY (SIMMONDSIACEAE)

There is one genus to the Jojoba family, and only one species to this genus, which is *Simmondsia chinensis*. That means botanists have found this plant to be quite unique!

The jojoba seed RICK ADAMS

JOJOBA

Simmondsia chinensis

Use: Nuts used for food.
Range: Low desert alluvial fans, along washes, and dry, rocky slopes, from about 1,000 to 5,000 feet
Similarity to toxic species: None
Best time: Nuts ripen in midsummer.
Status: Somewhat common in southwestern Arizona

Tools needed: None

PROPERTIES

Jojoba (pronounced “hoe-hoe-buh”) is an evergreen shrub found throughout the Southwest and into Mexico, especially in arid areas and washes. There is smooth bark and opposite leaves that are leathery, ovate, and dull green. The nutlike fruit is obtusely three-sided.

USES

When my friend Nathaniel used to work in the desert, we’d visit during the summer and pick the fruits off the jojoba bush and eat them. We ate lots of them, and we liked them. We ate them raw, we ate them dried, and we ate them roasted.

Flowering jojoba RICK ADAMS

The jojoba seeds taste a bit better when dried and lightly roasted. We’ve made many snacks from bowls of these seeds. Yet I constantly hear that you can’t eat the seeds “because they make car wax from the seeds.” Well, maybe car wax is made from the seeds, but they’re certainly edible and tasty.

Like so many conventional foods or wild foods, everything should always be consumed in moderation until you know how your body reacts to it. Jojoba is no different in this regard. Try a little, see how you like them, and see how your body reacts.

Jojoba in flower

Jojoba branch showing the paired leaves

The Cahuilla of the low desert ground the seeds into a powder and made a beverage that was said to be similar to coffee. The Yavapai parched the seeds and ground them into a powder, which had a peanut-butter-like consistency, and then ate it. Others mashed them into small cakes, which were then boiled and eaten. Though the indigenous peoples did eat the fruit, they were not regarded as being highly nutritious because much of the fruit is an indigestible wax.

The oily seeds were also ground into a paste or poultice and applied to sores by the Tohono O'odham.

CAUTIONS

Eating too many of these seeds has caused gastrointestinal upset in some people. "Too much" is relative, depending on the person's body size and tolerance. To reduce this possibility, it is advised to roast or parch the seeds for about a half-hour before consuming.

The mature fruit of jojoba JEAN PAWEK

NIGHTSHADE FAMILY (SOLANACEAE)

There are seventy-five genera of the Nightshade family and 3,000 species worldwide. Many are toxic, but many are good foods.

WHITE NIGHTSHADE and PURPLE NIGHTSHADE

Solanum americanum (aka *S. nodiflorum*) and *S. xanti*

The *solanum xanti* with its purple flowers

Use: When ripe, fruits are used raw or cooked. Greens are also cooked and eaten.
Range: Disturbed soils, urban areas, foothill areas, approximately 1,000 to 5,000 feet
Similarity to toxic species: Actually, according to many, this is a toxic species, meaning don't eat the green raw fruits and don't eat the leaves raw. Sickness is likely in either case. There is also a slight resemblance to jimsonweed, which is another plant in the same family and also toxic.
Best time: Summer
Status: Somewhat common
Tools needed: None

PROPERTIES

There are approximately 1,500 species of *Solanum* in the world, with fifteen found in Arizona.

S. americanum

White nightshade (*Solanum americanum*, aka *S. nodiflorum*) was introduced from tropical America. This one has white flowers.

Purple nightshade (*S. xanti*) is a native. This one has purple flowers.

In Arizona, we also find *S. jamesii*, a wild potato, once used for food by the indigenous peoples.

The very young plant much resembles lamb's-quarter, except that the nightshade doesn't have an erect stem; rather, it's more widely branched. Also, though the individual leaves of both nightshade and lamb's-quarter are quite similar, the nightshade lacks the mealy coating of ripe nightshade fruit as well as the often noticeable red in the axil of the leaf, which is common in lamb's-quarter.

S. americanum

The five-petaled white or purple flower is a very typical Nightshade family flower, resembling the flowers of garden tomatoes. The fruits begin as tiny BB-sized green fruits, and by August, they ripen into little purplish-black “tomatoes.” We’ve eaten the ripe fruit from both the listed *Solanum* species with no problems.

USES

The fruits of this plant seem to peak around August, when the plant can be prolifically in fruit if the season’s rain and heat have been just right. Regardless, I have found *some* ripe fruit of the white nightshade during nearly every month of the year.

Don’t eat these fruits while they are still green, as it could result in a stomachache and minor sickness. That is, you shouldn’t eat the green fruits unless they are boiled, fried, or otherwise cooked.

I will try a few of the dark purple ripe fruits when I see them while hiking. I like the fresh tartness. It’s very much like eating a tomato, but a bit spicier. They are great added to salads—just like adding tomatoes! But just like tomatoes, there are many other ways to enjoy the western nightshade fruit. We’ve smashed them and added to pizza dough. They taste like tomatoes but turn nearly black when cooked. They are good added to soup,

too. And because they are so small, you don’t need to cut or slice; just toss them into your soup or stew.

Also, just like sun-dried tomatoes have a unique flavor, you can let the night-shade berries dry in the sun (or in your food dryer), and then eat them as is, or reconstitute them later into various recipes. Though it isn’t absolutely necessary, I find that they dry quicker if you gently smash them first—such as on the cookie sheet where you’ll be drying them.

Fruit and leaf of the nightshade plant HELEN WONG

The young shoots and leaves of these plants are popular in certain cultures around the world. Friends from the Philippines, Mexico, and Hong Kong have told me that the cooked greens are commonly eaten in their homelands. Only the young greens should be used, and they should be at least double-boiled. They are not usually eaten alone, as you might eat spinach, but rather mixed with other vegetables, greens, or meat. In the Philippines, for example, the cooked greens are commonly used in a chicken soup. In Mexico, the nightshade greens are known as “yerba mora.”

CAUTIONS

While there may be other ripe nightshade fruits that could be eaten, we don't advise you eat any but those listed above. Also, do not eat the green berries; only eat the fully ripe, dark purple berries. Otherwise, sickness could result. Green berries should only be consumed if boiled, fried, or otherwise cooked. Anyone with any tomato sensitivity or sensitivity to other members of this family (e.g., eggplant, chiles, peppers, etc.) should not consume these fruits.

Do not eat the greens without boiling, changing the water, and boiling again before consuming.

WOLFBERRY

Lycium spp.

There are about one hundred species of *Lycium* worldwide. In Arizona, we find eleven.

Use: Fruits are edible.
Range: Generally below 5,000 feet. Found in the desert, in washes, and on rocky hillsides.
Similarity to toxic species: Since some nightshades are toxic, make sure you are accurately identifying this before eating it.
Best time: Fruits from late summer into the fall. They peak around July.
Status: Somewhat common
Tools needed: None

PROPERTIES

The flowers vary from white to lavender, tubular and flaring at the end, often with the stamens protruding beyond the petals. The flower is five-lobed (sometimes four-lobed) and slightly less than an inch in length. The little fruits that develop are about a half-inch in length, fleshy, and orange to red in color.

The overall bush, often described as spiny and scraggly, can grow to about seven feet tall, but is usually not that tall. It has dark green spatulate leaves with minute hairs. Overall length is about an inch to about an inch and a quarter long. There are obvious spines on the branches and leaf tips.

***Lycium andersonii* in fruit** DR. JAMES ADAMS

Wolfberry in fruit CLINTON D. WHARTON

Flowering wolfberry CLINTON D. WHARTON

USES

Wolfberries are edible raw, in reasonable amounts, such as a few handfuls. More can be consumed if you cook them or dry them. The flavor is distinctive, with both sweetness, bitterness, and its own unique taste. They are commonly used for pie fillings, jams and preserves, and dried for snacks similar to its relative, the goji fruit.

A study by William Dunmire and Gail Tierney revealed that nearly all the contemporary Puebloans to our east in New Mexico have at one time collected and used parts of this plant in differing ways. They reported that at many of the Pueblos they studied, these berries were eaten raw, boiled if not

ripe, and often sweetened, and that they were told that the use of this berry has been in decline.

At Zuni, the berries were eaten raw when ripe and boiled if not fully ripe and sometimes sweetened before eating.

At San Ildefonso and Santa Clara, the leaves of wolfberry—either fresh or dried and reconstituted with water—would be medicinally applied to cuts.

HUSK TOMATO (aka GROUND CHERRY)

Physalis spp.

There are about eighty-five species of *Physalis* worldwide, some of which are cultivated for food or ornamentals; in Arizona, there are fourteen species.

Use: Fruits are eaten.
Range: Found from 1,000 to about 5,000 feet. Grows in rocky slopes and washes, flat areas, and roadsides.
Similarity to toxic species: Since some nightshades can be toxic, always make sure you've positively identified the plant you are going to eat. However, the fruit of this one is very distinctive with its papery calyx (which looks like a lantern), which surrounds the fruit.
Best time: Mostly in the summer
Status: Common
Tools needed: A bag

PROPERTIES

Like members of the *Solanum* genus, these are often found weed-like in disturbed soils. The plant is generally under three feet tall. Leaves are very typically Night-shade family configuration, meaning somewhat triangular with irregularly lobed margins. The fruits are the most distinctive part of this plant. The five petals of the flower—yellow or purple—are fused. When the fruits develop, they are cherry-sized or larger and covered in the papery calyx, which resembles a hanging lantern.

A view of *P. crassifolia* JEAN PAWEK

These are often found at many ancient Puebloan sites, as well as in disturbed soils and roadsides from 1,000 to 5,000 feet in elevation.

USES

The mature fruits are most commonly prepared by first removing the “lantern,” the papery covering that surrounds each fruit. When fully ripe, these can be added to all salads. They can be used as you’d use tomatoes. The ripe fruits are good for making salsa, again, as you’d normally use tomatoes.

The leaf and fruit of the ground cherry
MARK VORDERBRUGGEN

The fruit and flower of the ground cherry

MARK VORDERBRUGGEN

The husked fruit MARK VORDERBRUGGEN

The leaf of the ground cherry plant
MARK VORDERBRUGGEN

RECIPE

Native Salsa

Remove the husks of the ground cherries, put the fruit in a pan and roast in an oven for twenty minutes.

Then mix chile, coriander, and onions in a blender for the seasoning.

Fresh onions are often dipped into this salsa and eaten like chips and dip.

Famous in the Zuni area.

—RECIPE FROM STUDENTS IN PATRICIA ALLEN'S LANGUAGE AND COMPOSITION CLASS AT ZUNI HIGH SCHOOL, RECORDED IN *WILD PLANTS OF THE PUEBLO PROVINCE* (SEE REFERENCE LIST.)

These are commonly cooked into soups and stews and can also be dried in the same manner as tomatoes are dried and then used in cooked dishes.

Archaeologists have found evidence that this plant was collected, eaten, and probably cultivated for at least 1,100 years and most likely longer. Some archaeologists feel that the husk tomatoes were commonly cultivated and used during the Anasazi times since the plants are often found near the long-abandoned fields.

CAUTIONS

Fruits should always be fully ripe. Unripe fruit is regarded as toxic.

NETTLE FAMILY (URTICACEAE)

The Nettle family includes fifty genera and 700 species worldwide. There are forty-five species of *Urtica*, only three of which are found in Arizona.

STINGING NETTLE, HORTIGA

Urtica dioica

Use: Leaves used for food (cooked) and for tea; stalks made into fiber.
Range: Riparian, urban fields, edges of farms, disturbed soils, etc., up to 9,000 feet
Similarity to toxic species: None
Best time: Collect the greens in the spring.
Status: Common
Tools needed: Gloves and snippers

A view of the nettle plant

PROPERTIES

This perennial generally sends up a single stalk in the winter or spring that can reach around five feet tall if undisturbed. The leaves are oblong with toothed margins and taper to a point. Both the leaves and stalks are covered with needles or bristles that cause a stinging irritation when you brush against them.

Though it's a European native, you can find it all over Arizona, along streams in the wilderness, and in fields and backyards.

USES

The young, tender leaf tips of nettle are the best to use, though you could also collect just the leaves later in the season (the stems get too tough). These tender tops can be steamed and boiled, which removes the stinginess of nettles. They are tasty as a spinach dish, alone or served with butter, cheese, or other toppings. Also, try the water from the boiling—it's delicious!

FORAGER NOTE: Nettles are an undervalued medicine, and herbalists speak highly of the many uses for nettle tea. I have found that drinking nettle tea in the spring helps to alleviate the symptoms of pollen allergies.

RECIPE

Stinging Nettles Hot Sauce Recipe

I created this hot sauce through experimentation and really enjoyed it. It has a mild "wild" flavor and is really liked by those who taste it. It's extremely simple to make. This is a very basic recipe, and you can include some of your favorite flavors and ingredients, such as Italian herbs or bay leaves.

Supplies

Latex gloves

Blender (or go primitive with a knife and a *molcajete*)

Jars or bottles

Metal pot

Ingredients

5 ounces jalapeño peppers, stemmed and chopped with seeds (Make sure they're not too hot though.)

1 ounce serrano peppers

5 ounces fresh nettle leaves (or young nettles)

Juice from 2 limes

6 garlic cloves

3½ cups raw apple cider vinegar

1 teaspoon kosher or pickling salt

1 cup water or white wine (I used white wine in my original recipe.)

Combine all the ingredients and blend until smooth. Strain for a thinner sauce, or keep it as is. Transfer to jars and cover. Refrigerate at least two weeks, and then enjoy.

—RECIPE FROM PASCAL BAUDAR

We've also made tasty stews and soups, which we began by boiling the nettle tops. Then we quickly added diced potatoes, some red onions, and other greens. Often miso powder was added, or not. Cook until tender and serve, or add Braggs Liquid Amino Acid for some great flavor and nutrition.

This is a vitamin-rich plant, so you'll be getting your medicine when you eat it.

The tender leaves of the young nettle plant

Because the nettle plant is only available seasonally in the spring, I harvest as much as I am able each year. I freeze some to use in soups, and I dry as much as I'm able. If I am using the dried leaves for tea, I simply take a small amount of the entire dried plant for each pot of tea, stems and all. If I am making soup, I remove all stems and sift the leaves to get a fine powder, which I typically make into a miso soup.

We also take the sifted nettle powder and mix it half-and-half with flour to make a pancake batter. These make excellent pancakes (you could also make bread or biscuits), either eaten plain or with some topping like jam.

MEDICINAL

When I have severe allergies in the spring from various pollens, an infusion of dried nettles is one of my best remedies. However, despite all the medicinal uses for nettles listed in herbal literature, I've not found any data to support why nettle tea is helpful for me in this manner. Nettle leaf tea is widely regarded as an astringent, diuretic, and useful in cases of excessive menstruation. Herbalist Michael Moore states that the nettle seeds are an excellent lung astringent, particularly useful after bronchitis, to help return tone and capillary strength to the bronchial mucosa. When I dry nettles for tea, I dry the entire herb and remove the stems when fully dry. Thus, my tea generally has seed mixed with the leaf.

CORDAGE

The mature nettle stalks have long been used as a source of fiber to make cordage, which has been used for bowstrings and other utilitarian purposes. The stalks can be processed in a number of ways, such as first soaking in water to soften, and then gently beating with a piece of wood to express only the fiber.

Nettle drying in an open-air mesh drying rack

CAUTIONS

As you will probably learn from personal experience, you get “stung” when you brush up against nettle. This is due to the formic acid within each

“needle” or “bristle” that causes skin irritation. So be careful when you gather nettle greens, and wear gloves or other protection. And if you do get the nettle rash, you can treat it with fresh aloe vera gel, or with the freshly crushed leaves of other plants such as chickweed or curly dock.

GRAPE FAMILY (VITACEAE)

The Grape family has about fifteen genera and about 800 species worldwide.

CANYON GRAPE

Vitis arizonica

Use: Fruits eaten raw or cooked; leaves used in Middle Eastern cooking.
Range: Prefers riparian areas and moist shady canyons, 2,000 to 7,000 feet.
Similarity to toxic species: Wild cucumber (*Marah* spp.) could be confused for wild grapes when young. However, once they begin to fruit, wild cucumber fruits (which are large and oval-shaped, about four inches long) bear no resemblance to grapes.
Best time: The fruits mature in the summer; leaves are best collected in spring.
Status: Widespread
Tools needed: None, but clippers can be useful.

PROPERTIES

Though there are sixty-five known species of *Vitis*, it is only represented in the wild in Arizona by one species, *Vitis arizonica*, or canyon grape. *V. vinifera* is the introduced cultivated grape.

Wild grapevine

Anyone who has ever grown grapes, or visited a vineyard, can automatically recognize wild grapes. Typically growing along streams or in moist canyons, these are sprawling vining plants that often cover entire hillsides and whatever vegetation is growing there.

You can usually see peeling bark on the woody stems and tendrils opposite each leaf. The leaf is dark green on the top, lighter on the bottom, broadly heart-shaped, and coarsely toothed. The fruit clusters tend to be sparser than cultivated grapes, and sometimes (depending on the location and the season) there is a lot of leaf and vine and very little fruit.

USES

Indigenous peoples have long used the wild grapes, according to the various early records left by explorers and

A view of the wild grapevine HELEN W. NYERGES

Wild grapes, often small, sparse, and sour when raw

anthropologists. (It’s likely that the grapes were mentioned in these reports because it was one of the plants that the explorers already knew from Europe.)

One of my first uses of this plant was when my friend Talal was getting married. He’s from Lebanon, and he wanted to make some Middle Eastern grape leaves for the wedding reception. We went up into the local mountains and collected many of the youngest wild grape leaves. We then boiled them to soften, added a tablespoon of cooked rice on each leaf, and then rolled it. We put about two dozen of these in a pan and cooked them further. Talal and I thought these were the most delicious grape leaves we’d ever had, though some of the party guests thought the leaves were a bit tough!

But mostly, people think of the fruit when thinking of grapes. Commercial grapevines are far better producers of the fruit because they

prune the vines back so they get more sun, and they fertilize them. Wild grapes produce endlessly long vines, and often just a few fruits per cluster. In a dry year, you may not find any grapes at all. But if you do and your timing is right, you can create some wonderful dishes from the wild grapes. On a few occasions, I've had wild grapes that could be eaten out of your hand like table grapes, but that is the exception. Generally, wild grapes are very tart and must be cooked. Once cooked, however, you can make some delicious juices, jams, jellies, and sauces, or even just dry them for wild raisins.

Cultivated grapes to compare with wild grapes

Sometimes the desert Indians made a cooked mush from grapes.

Grape leaves have sometimes been made into a poultice for wounds.

The vines can also be used for weaving baskets and for other functions where the fiber will not be under tension.

CALTROP FAMILY (ZYGOPHYLLACEAE)

Zygophyllaceae includes around 285 species in twenty-two genera.

Plants in the family *Zygophyllaceae* might be trees, shrubs, or herbs. They are often found in dry habitats. The leaves are usually opposite, often with stipules and spines.

CREOSOTE

Larrea tridentata

This is the only species of *Larrea* found in Arizona.

A view of the creosote bush MARK VORDERBRUGGEN

Use: Leaves and twigs for medicine
Range: Found below 4,000 feet, primarily in Southern Arizona. Creosote can be found below 4,000 feet all the way east to Central Texas, and west to the high desert of Southern California.
Similarity to toxic species: According to some, this is a toxic species.
Best time: Leaves can be gathered at any time.
Status: Relatively common
Tools needed: Clippers

PROPERTIES

Creosote is a ubiquitous plant, typically about chest high, but arising up to ten feet tall. These are multibranched bushes, often evenly spaced throughout the desert. Each small leaf is divided into two parts and is sticky. The small, curled leaves have a yellow-green color, looking drabber in summer. The little yellow flowers cover the plant in the spring or after a good rain, and they mature into fuzzy little round capsules.

USES

Creosote (*Larrea tridentata* or *L. divaricata*) has been studied and researched for over fifty years and has been used by the desert Indians for centuries. Its most significant chemical is nordihydroguaiaretic acid (NDGA), a known preservative and powerful antioxidant. Among other things, NDGA attacks cancer cells in the body and does not produce the side effects of other chemotherapeutic agents. There are numerous case studies that showed the regression of tumors and certain cancers. Cases of toxicity involved apparent overdoses of creosote in the pill form.

Actual cases of cancer and tumor remission are reported in *Alternatives in Cancer Therapy*. The author also lists the incidents where there was liver damage when patients inappropriately increased a dosage of creosote pills. Because of these incidents, the FDA requested that distributors "voluntarily" remove this herb from the marketplace. According to my research, the FDA action resulted from twelve cases of liver toxicity that resulted from the overuse of creosote-based pills.

As Michael Moore points out in his *Medicinal Plants of the Desert and Canyon West*, "Further tests over the years . . . have shown that chaparral can both inhibit and stimulate the growth of cancer cells, so forget that. For

the other conditions, the small daily doses recommended are the best approach."

Even if you can't go to an herb store and readily buy creosote, it is incredibly common and widespread throughout parts of the Southwest.

The round seed heads of the creosote bush MARK VORDERBRUGGEN

Creosote in flower MARK VORDERBRUGGEN

South of the Mogollon Rim, below about 4,000 feet, you can find creosote everywhere. It is found east into Central Texas, into Baja, and west to the deserts of Southern California.

Creosote was listed in the *U.S. Pharmacopoeia* from 1842 through 1942 as an expectorant and pulmonary antiseptic. The powdered and crushed leaves, as well as a poultice from the leaves, have been applied to wounds and infections. In general, the leaves are regarded as a good antiseptic. A creosote liniment has reportedly been effective for elderly people with swollen limbs resulting from poor circulation. Katherine Siva Saubel, coauthor of *Temalpakh: (From the Earth) Cahuilla Indian knowledge and usage of plants*, successfully used a decoction to prevent infection from a wound from a rusty nail. The decoction from the leaves was pressed over the wound and the area heated with a hot stone.

This plant has been used for centuries by indigenous peoples of this area and various folk doctors.

Indigenous peoples throughout this plant's growing area all used it in various ways, as reported by Daniel Moerman in his book *Native American Ethnobotany*. The tea has been used for such issues as bowel complaints, menstrual cramps, colds, asthma, and congestion. The leaves and stems are either infused or brewed by decoction, depending on the strength required.

The tea from the leaves has been used in the past by the Cahuilla for chest infections, stomach cramps, colds, and a good decongestant for clearing the lungs. There is also the belief that it will cure certain cancers, a point that modern research seems to verify.

I have had creosote infusion for a cold and found the flavor very unpleasant, but in my few uses, there seemed to be a quick recovery.

Used externally, creosote should still be applied cautiously but seems to be a lot safer. Many Native people make baths from the creosote and soaked in the water for sore muscles and arthritis. I've done this a few times after running long distances, or other workouts, and found it thoroughly relaxing with no negative aftereffects. However, it does seem to stain the bathtub, and it does stink up the entire house! The bath has been used widely externally by indigenous peoples for various pains and inflammations.

A decoction of the leaves is used as a soak for athlete's foot.

Another use is to boil the leaves in a pot, turn off the water, and inhale the fumes for congestion and colds.

Native people also used the wood and branches of this common plant for brushes, small arrows, sticks to dislodge saguaro fruits, and other daily uses.

BOTANIST NOTE

Creosote, also known as chaparral, is not the same as creosote used to treat telephone poles and does not grow in the biological zone known as the chaparral.

Creosote for telephone poles is a petroleum or tar, which is not made from this plant. And though this is also commonly called chaparral, it grows throughout the desert regions but not in that zone called “chaparral” by biologists.

CAUTIONS

Creosote bush may cause liver and kidney damage with concentrated or prolonged usage, especially in pill or tablet form. Do not think of this herb as something for daily or regular consumption. In some cases with internal use, diarrhea, fever, skin rashes, and itching has been reported.

Women who are pregnant or breastfeeding should not use this. You should not use this herb if you have kidney or liver problems, are taking certain medicines, or if you are diabetic. If you are trying to become pregnant, chaparral may prevent ovulation, which will lower your chances.

Monocots

These plants have one cotyledon. Leaf veins are generally parallel from the base or midrib, and flower parts are generally in threes. Some examples of monocots include all grasses, cattails, rushes, palms, all lilies, and all onion family members.

CENTURY PLANT FAMILY (AGAVACEAE)

There are twenty-three genera and 637 species worldwide in this family.

AGAVE

Agave spp.

A fully grown agave in an urban yard

Also known as century plant, mescal, and maguey. There are twelve species of agave in Arizona.

Use: The caudex (“heart”), immature flower stalk, flowers, fruits, and seeds can be used for food; most leaves great for fiber.

Range: Dry plains, rocky hillsides, desert washes, canyons, generally from the low elevations up to 8,000 feet
Similarity to toxic species: None
Best time: The food sources are available from mid-spring to about midsummer; leaves can be gathered at any time.
Status: Relatively common
Tools needed: Clippers for the leaf; shovel for harvesting the heart

A flowering stalk of the agave

PROPERTIES

The strong, tapered, spine-tipped leaves have toothed margins (edges) and are formed in rosettes.

When the plant is fifteen years old or more, a flower stalk emerges from the center of the rosette and arises to a height of ten to twenty feet. As the flower stalk matures, the clusters of small, bright yellow flowers appear.

A smaller species of agave BOB SHUMAN

Nonbotanists will often confuse yuccas and agaves. Though they are related, the yuccas tend to be smaller and the leaves narrower than the agaves.

USES

Agave has long been one of the most important plants of the desert Native Americans. In fact, it was the cultivation of agave that made it possible for the Hohokam people to flourish in the deserts of Southern Arizona from around 1100 to 1300 CE. Although archaeologists had long known of the foraging practices of the desert Native Americans, it was not until 1988 that they confirmed that the Hohokam once had at least 102,000 agave plants

under cultivation. A survey by four archaeologists (Paul and Suzanne Fish of the Arizona State Museum, Charles Miksicek, and John Madsen) showed evidence of dams, terraces, and rock piles where 1,200 acres of agave were under cultivation. This desert plant provided a significant amount of the Hohokam food, water, fiber, and construction material.

Agave being prepared to roast DANIEL McCARTHY

A long stick for cleaning up the agave plant before roasting DANIEL McCARTHY

Removing the outer leaves of the plant DANIEL McCARTHY

The center heart, or caudex (fleshy, cabbage-size center of the plant from which the leaves radiate), available year-round, is edible—preferably steamed, roasted, or boiled. In the past, many indigenous peoples cooked the hearts in firepits. They dug the pits, built a fire, let it die down, and then they added the hearts. This was all covered with fresh vegetation and a layer of soil and left to steam for two days or so. The cooked hearts were then peeled and eaten or mashed and formed into cakes and sun-dried for later use.

The unique flavor of the agave buds has been described as a combination of turnip and squash.

The flowers can be boiled and eaten or dried and later steeped into teas. The seeds, also nutritious, can be ground into flour. John Watkins of Harbor City, California, reports that during a trip to Mexico City in August 1979, he was served agave flowers. “The women boiled the flowers and mashed them into patties,” Watkins said. “They seasoned the patties with their herbs. Then the women sautéed them. They were delicious.”

A sweet water can be obtained directly from the agave plant. When you observe the mature plant, which has not yet flowered, you’ll note that there is a solid center cylindrical spike from which each leaf unfolds. To obtain water, cut off approximately the top half of this center spike, making a horizontal cut. Next, cut off a one-inch piece, which will be used later as a cap. Then use a sharp knife to hollow out a bowl into the spike and place the cap over the bowl. Within a few hours, a sweet water will seep into the bowl, and you can drink it as is. It is mildly sweet and called *aguamiel* (“sweet water” in Spanish). Water will continue to seep into the bowl for up to a month, depending on the size of the plant.

When allowed to sit for about two weeks, the sugar content of *aguamiel* naturally ferments, producing pulque, legally classified as a wine due to its approximately 12 percent alcohol content. Tequila can be made by distilling this liquid.

The stringy fibers of the leaves can be extracted and used in much the same way as yucca fiber, though you have to be more careful with the agave since the sap can splash on you and cause a rash. First, gently pound or shred the fresh leaves until only the fiber remains. This can be done in running water, or a stream, where the fiber can be separated from the

vegetation of the leaf. Then, you can twine or braid immediately, or allow to dry before making twine. If you allow to dry, you might dampen before twining to create greater flexibility. Once you make the twine, you can then fabricate sandals, mats, rope, and other useful items.

The peeled skin of the agave leaves can be used as paper. You make the paper by cutting a large rectangle from the broadest section of the leaf. Carefully and slowly peel back the rectangle from one corner. If you peel carefully, and if the leaf has no imperfections, you should be able to get a large piece of this agave paper.

I was once at a school in Mexico where the large agave leaves had been used as a roofing material. A small open building used by students to have lunch and do studies had a simple roof that was framed with poles, and the actual roofing material was several layers of the entire agave leaves. They had been tacked first to the lower part of the roof and then added in horizontal layers until the roof had

Just about ready to roast DANIEL McCARTHY

The roasting pit for agave. A day of roasting in a covered pit is required. DANIEL McCARTHY

been fully covered. As I stood under this roof in a downpour, I could see at least three layers of leaves and that no rain made it through the roofing.

CAUTIONS

Be careful when gathering agave leaves. If the fresh juice splashes on your bare skin, it can cause a rash the equivalent of that caused by poison oak. Long sleeves and gloves are advisable during the harvest.

Three agaves in an ornamental garden

YUCCA

Yucca baccata, Y. brevifolia and others

Use: Immature flower stalk, flowers, fruits, and seeds can be used for food; roots, and some leaves, can be used for soap; most leaves great for fiber.
Range: Dry plains, rocky hillsides, desert washes, canyons, generally from the low elevations up to 8,000 feet
Similarity to toxic species: None
Best time: The food sources are available from mid-spring to about midsummer; leaves can be gathered at any time.
Status: Relatively common
Tools needed: Clippers for the leaf; sharp knife for other parts

FORAGER NOTE: The leaves (used green, or dried, but moistened before using) are excellent for making twine, braids, sandals, hats, nets, net bags, or any item requiring twine or rope. The green leaves of some species, when shredded and agitated with water, produce a quality soap for washing skin, clothing, dogs, and so on. The dried flower stalks—if of a sufficient diameter—can be hollowed and used for quivers, drums, or general-purpose carrying cases.

PROPERTIES

There are nine species of yucca in Arizona. This includes Arizona yucca (*Y. baccata*), Joshua tree (*Y. brevifolia*), and soaptree yucca (*Y. elata*). *Hesperoyucca whipplei* (formerly *Y. whipplei*) is only found in the northwest part of the state and more common in California and Baja California.

Dried yucca flowering stalk has been hollowed out and used for "hot-rock" cooking.

Four-leaf Mogollan-style yucca sandal, tried on by Paul Campbell

Yuccas are a somewhat ubiquitous plant in many locales, including the deserts, foothills, and the lower elevations. The leaves are long, lance-shaped, and very fibrous with a sharp tip. Some varieties have sharp edges.

The beginning flower shoot of a *Yucca baccata*
MARK MERRIWEATHER VORDERBRUGGEN

The white to cream-colored flowers are produced when the plant is in its final season.

Yucca looks like a giant pincushion of leaves that are up to two feet long and one to two inches wide.

A young yucca MARK MERRIWEATHER VORDERBRUGGEN

The plants will grow for twenty years or more, then flower one spring, and die that season. The beginning of the flower stalk appears like a huge asparagus, somewhat red in color. As this flower stalk grows taller in April or May, it begins to flower with its clusters of creamy-white flowers. There are six perianth segments (sepals and petals) of the flowers. By summer, the green fruits develop. The fruits are capsules that have a few chambers. When the fruits mature, the flat black seeds will develop in these chambers, stacked like sliced bread.

RECIPE

Pickled Yucca Shoots

I've pickled yucca for several years now, and they've even been served in some of the top restaurants in Los Angeles. The recipe is

very simple.

For this recipe, we use half-pint jars.

Peel and slice the fresh yucca shoot into small half-inch squares. Fill up the jar with as many squares as you can, and in each jar place the following:

1 garlic clove

¼ California bay leaf (or ⅓ regular bay leaf)

1 small-to medium-size spicy dehydrated chile (just because I like some heat)

1 teaspoon grated ginger or a nice chunk of ginger (around a half-inch cube)

Make a pickling solution of 2 cups raw apple cider vinegar and 2 cups white wine (or water), ½ cup sugar, and 2 teaspoons sea salt. Depending on how many jars you're making, you may need to make more. Bring the solution to a boil and pour it into the jars, covering the yucca.

Close the lids and place the jars in the fridge. Wait two to three weeks before consuming.

If you know how to can and want to preserve them outside the fridge (shelf-stable), use the water-bath method and boil for fifteen minutes.

—RECIPE FROM PASCAL BAUDAR

USES

Yucca was one of the most important fiber plants of the indigenous peoples; let's first look at the food uses.

The flowering of a *Yucca baccata* MARK MERRIWEATHER VORDERBRUGGEN

The flowering of a *Yucca baccata*

MARK MERRIWEATHER VORDERBRUGGEN

***Hesperoyucca whipplei* in the early stages of sending up its flower stalk**

In the spring, yucca sends up its asparagus-like immature stalk that can be cut, peeled, and eaten raw, though it's better boiled, or sautéed, or cooked into a mixed vegetable dish. Some species are more palatable than others. Note: Though I can eat this section raw, some people will vomit if eaten raw. I would advise boiling for about twenty minutes.

Next, assuming you didn't cut down the stalk, the plant begins to flower with these beautiful creamy-white flowers. The flowers have traditionally been eaten in a number of ways, perhaps the most common is first to boil

them (to remove the soapiness), drain, add flour, form into patties, and then sauté. They could also simply be boiled and seasoned.

The fruits that follow are also good, and you need to get them while they are still white inside. They are probably best baked in your oven or in the coals at the edge of the campfire. They are reminiscent of cooked squash. You can also boil them until tender.

Mark Tsunokai, the author, and Roman observe a large flowering *Hesperoyucca whipplei*. RICK ADAMS

Flower and fruits of *Hesperoyucca whipplei*

Lastly, the flat black seeds could be collected once the fruits mature in mid-to late summer. The seeds have been traditionally ground into a flour and used with other flours to produce various pastry products like biscuits or pancakes. However, I have never found the flavor of the seeds very palatable.

In Mexico, the flowers of some species of yucca are boiled, then mixed with flour and spices, and shaped into patties and cooked. It’s like eating a vegetarian burger.

A young yucca shoot being prepared for a meal

Yucca shoot slices; some eaten raw, and some boiled

ONION OR GARLIC FAMILY (ALLIACEAE)

There are thirteen genera and 750–800 species of the Onion family worldwide.

WILD ONIONS

Allium spp.

Use: Bulbs and greens eaten raw or cooked. However, for sustainability, I strongly advise readers to *leave the bulbs in the ground* and only pick the greens for food.
Range: Wild onion can be found in the desert flats at 1,000 feet, and other species prefer mountain meadows and forest clearings up to 10,000 feet.
Similarity to toxic species: Wild onions were once categorized in the Lily family because these two groups are so similar, and the flowers of most are nearly identical. There are deadly members of the Lily family, so never eat any member of this group unless you are absolutely certain you have made a positive identification.
Best time: The leaves and flowers are most noticeable in the spring and early summer.
Status: Though in certain areas you will not find wild onions, they can be common locally.
Tools needed: None

PROPERTIES

In Arizona, thirteen species (not including varieties) of *Allium* can be found. Most are natives.

Wild onions go by many local names: red onion, desert onion, nodding onion, as well as ramps, wild garlic, leek, and so on.

The root of wild onion RICK ADAMS

Wild onion flower ©ANDREY ZHARKIKH

In general, wild onions look like small green onions from the market, though many are inconspicuous when not in flower. There is a small underground bulb, and the leaves are green and hollow. The flower stalk tends to be a bit more fibrous than the leaves. There appear to be six petals of the same color; in fact, there are three sepals underneath the three identical petals, giving the appearance of a six-petaled flower. The expedient field key to identifying a wild onion is the unmistakable aroma. If you don't have that aroma, you shouldn't use the plant because similar-appearing members of the Lily family could be toxic or poisonous.

Wild onions can actually be found all over the United States in a broad diversity of ecotypes. Here in Arizona, we find that they either prefer the lower desert regions or the higher-elevation meadows and clearings. We notice them mostly when they flower because otherwise they appear very much like grass.

USES

When you find wild onions, you'll be tempted to pull up the plant so you can eat the bulb. That's what you do in your own garden, but that's not the only way you can use these. Generally, I only pick the green leaves for consumption. If there are a lot of the wild onions, I might take some of the bulbs to eat, break up the cluster, and replant some. The reason that I generally only eat the greens is that I've seen some patches of wild onions disappear entirely due to foragers uprooting the whole plant.

While the wild onion bulbs can be used in any of the myriad ways in which you're used to eating garlic, onions, chives, leeks, and so on, you'll still get most of the flavor and most of the nutritional benefits by eating only the leaves.

I pinch off a few leaves here, a few there, and I add them to salads. Diced, they're great in soups, stews, egg dishes, and stir-fries. And if you ever have to live off MREs, you'd spice them up and add to their nutritional value by adding any of the wild onion greens. Yes, I know that many of these leaves are small and like grass, so it takes a bit of work to get enough to flavor a soup or salad.

All tender parts of wild onions are edible, above- and belowground. Generally, the older flower stalks become fibrous and unpalatable. Otherwise, the bulbs and leaves are all used raw or cooked. Simply remove

any outer fibrous layers of the plant, rinse, and then use in any of the ways you'd use green onions or chives.

Wild onions can be added to salads, used as the base for a soup, cooked alone like spinach, chopped and mixed into eggs, cooked as a side to fish, and used to enhance countless other recipes. Wild onions share many of the healthful benefits of garlic and improve any urban or wilderness meal. Backpackers who are relying on dried trail rations will certainly enjoy the sustenance of the wild onions.

Many indigenous peoples relied on wild onions and regarded them as staples, not just condiments.

There are excellent health benefits associated with eating any members of this group. Some of these benefits include lowering of cholesterol levels, flu prevention, and reduction of high blood pressure. Used externally, the crushed green leaves can be applied directly to wounds to prevent infection.

CAUTIONS

Some members of the Lily family with bulbs are deadly poisonous if eaten. Wild onions used to be classified within the Lily family because their characteristics are so similar. Therefore, make absolutely certain that you have correctly identified any wild onions that you intend to eat. You should check the floral characteristics to be certain that there are three sepals and three petals. Then make sure you detect an obvious onion aroma; if there is none, do not eat the plant. Though there are a few true onions that lack the onion aroma, it is imperative that you have absolutely identified those nonaromatic species as safe before you prepare them in your lunch.

PALM FAMILY (ARECACEAE)

Worldwide there are about 200 genera and about 3,000 species. These are very conspicuous trees, widely planted as a street and park tree. Typically, there is the large trunk, which could be fat or somewhat skinny, and can rise about sixty-five feet or as tall as a five-story building (such as in the case of the Canary Island date palm, which is not native but has widely naturalized). There is typically the trunk with the fronds arising from the crown. The fronds are either palmately or pinnately lobed. The palmate leaves are formed on a stem; these are the fan palms. The leaves can also form as pinnately lobed leaves or feather fronds. The fruits are usually drupes and are generally called dates. There is the common date palm with the sweet fruits and two-lobed seed, and there are also the little black round-to-ovate fruits from the native palm.

DESERT FAN PALM

Washingtonia filifera

Use: Fruits are edible fresh or dried. Dried fruit (minus the seed) is used in many dishes. Leaves are used in many utilities, such as fire-making, shelter, etc.

Range: The desert fan palm is restricted to the canyons of the desert mountains, at a 2,500-foot elevation. Found primarily in the Kofa and Hieroglyphic Mountains, though it can be found cultivated elsewhere.

A traditional shelter made from the fronds of desert palm RICK ADAMS

A canyon of desert palms RICK ADAMS

Similarity to toxic species: None
Best time: Fruits in the summer
Status: Scattered, common locally
Tools needed: Usually you pick the fruit off the ground. If you can’t wait, you’ll need a ladder.

Tree-pruner shows the edible heart from the desert palm, from a tree he’d just cut down.

PROPERTIES

In the wild, there is only this species of *Washingtonia* in Arizona.

Not widespread, the desert fan palm's main trunk arises to 60 feet, and the dried fronds are often seen hanging down the stalk. The leaves are like fans, with the outstretched leaflets arising from a common stem. The fruits are small and black.

USES

The little fruits can be collected and eaten as is, spitting out the seed. Indigenous peoples ground the fruits, sometimes seed and all, into a sweet flour that was then used for a sweet gravy or a drink. The powder can be added to other foods as a sweetener, just as you'd add white sugar in the modern diet.

Alan Halcon shows the mature black seeds of the desert palm.

Note: Because various parts of all palms can be used in the same way, the following comments can be applied somewhat generically to all of the palms and don't necessarily apply exclusively to the native desert fan palm.

When the tree is cut down, the inside heart can be cut out and eaten. Yes, you will need saws and/or machetes to do this effectively. The white, edible part is at the base of the leaves, in the very middle of the plant. If it is not very tender, it won't be good to eat. The hearts can be eaten raw, boiled, or stir-fried, and they can be pickled as well. It's a delicious food from the palm tree.

The dried leaves of most palms have multiple craft uses. They are good for making baskets, hats, sandals, and other woven goods. They can be used

as the thatching for homes as they were by the desert Indians in days gone by.

The stem of the fan palm is of the ideal balance between softness and hardness for a hearth for making fire with the hand drill or bow drill.

RUSH FAMILY (JUNCACEAE)

The Rush family has seven genera and 440 species worldwide.

RUSH

Juncus spp.

Use: Tender white growth at base of shoots edible raw or cooked; seeds cooked in pastry or porridge.
Range: Riparian areas
Similarity to toxic species: None
Best time: Spring for the shoots; fall for the seed
Status: Common locally
Tools needed: None

PROPERTIES

There are 315 species of *Juncus* worldwide. In Arizona, there are at least twenty-three species (not counting varieties).

When seeing *Juncus* for the first time, many folks will think it’s a type of grass, cattail, or perhaps reed. Yes, it has a grasslike appearance, but there are some important differences that put this plant into another family.

The leaves are long, grasslike, and hollow from top to bottom. There are various lengths of *Juncus*, and *J. textilis* can be found in thick patches from five to six feet tall. The leaves are round in the cross section. The flowers are inconspicuous bits of seed on the end of long stems, tassel-like, and are formed near the top of each leaf, generally off to one side.

Like many grasses and the cattails, these spread with an underground system of rhizomes.

They are typically found in association with wet areas, such as a spring or river, though they are not necessarily right in the water, such as you’d find with watercress.

USES

J. textilis and its close relatives are regarded as some of the best weaving materials for baskets, mats, and other woven products. In addition, there are at least two good food sources from this plant.

In the fall, there will be a small tassel of seeds on the top portion of the rushes. If you're there at the right time, you can put a bag under the tassel and shake out the seed. These seeds are then used in the two ways in which most grains can be used: mixed in with pastry products or as a cooked cereal.

In the spring, you can gently pull up the long leaves and note that the bottom of the plant is white and tender. There's not a lot of food here, but it's good, and you can get a lot in a short period of time. You can eat them raw on the spot or save them to add to salads, stir-fries, or soups.

Harvesting the shoots seems to make the rush patches grow better, but you still shouldn't just pick these for the tender base and then discard the

rest because you really only get a nibble from each shoot. The upper part of the plant—the long leaves—are great for making traditional baskets. So, if you're going to eat some of the young bases, you should really collect the shoots and use them for weaving or give them to someone who makes baskets. Unless, of course, you're lost and starving, which is a wholly different situation.

FORAGER NOTE: Properly prepared, these leaves are ideal for much of the traditional basketry done by California Indians. One of the simplest baskets that can be made with these leaves is described by anthropologist Paul Campbell in his book Survival Skills of Native California. Much of Campbell's research was done in Baja, California, among the indigenous people who live there today.

LILY FAMILY (LILIACEAE)

The Lily family is huge, with about 300 genera and about 4,600 species worldwide. Many have edible bulbs, though some are toxic. The group of yuccas and agave have been reclassified into their own family, and onions have been reclassified into their own family, as botanists have sought to bring more clarity to these groups.

DESERT MARIPOSA/SEGO LILY

Calochortus spp.

There are about sixty-five species of *Calochortus* in North America. In Arizona, there are six species, including *C. kennedyi* (desert mariposa) and *C. nuttallii* (sego lily). The sego lily is also the Utah state flower. The roots of this had been widely used by early Mormons for food.

Use: Bulbs are edible.
Range: Widespread throughout the West, on dry mesas, hillsides, from lower elevations up to 8,000 feet
Similarity to toxic species: The plant is distinctive, but if you saw only the bulb, it would be possible to misidentify.
Best time: Spring to summer
Status: Some are rare, some common.
Tools needed: Digging tool

A view of one *Calochortus* flower LILY JANE TSONG

A view of *Calochortus* flowers BOB SHUMAN

PROPERTIES

The small bulb resides deep in the ground, and it seems to prefer harder, rocky ground. Most of the time, there's nothing to tell you there are bulbs underneath, except perhaps last year's dried leaves and stalk.

In the spring, the grasslike leaves emerge, still somewhat inconspicuous. The leaves are C-shaped in the cross section. These will arise perhaps a foot tall.

Then the flower emerges, something that tells you, "This is special." It's a beautiful and unique flower, with the typical Lily family pattern of three sepals and three petals. The sepals are pointed and narrower than the petals. The petals can be various colors, from white to pink to orange, and each petal typically has a bit of another color, making the flowers very striking. There are six stamens and one pistil.

The bulbs are nearly always deeper than you would expect. I'd seen pictures of the mariposa lily before I'd ever seen the real thing, so when I first encountered one, I decided to look at the root. I dug and dug and dug

into the hard, rocky hillside, and when I tried to extricate what would have been a tiny bulb, only the stem came out! In such soil, it's better just to leave the bulbs alone and enjoy the floral beauty.

USES

My recommendation is that you only dig these when they are abundant and the soil is somewhat loose. Then, you'll need a long digging stick or a narrow spade. Move around as you dig a few in each site. The disturbed soil will actually serve to promote the growth of more bulbs, which Native people learned centuries ago.

Once collected, wash the bulbs of dirt and remove the outer skin. They can be eaten raw or cooked in various dishes. Since they are so small, you'll not usually find enough for a dish of just these, but you can add the cooked bulbs into soups, stews, omelets, and other cooked dishes. They are mild-flavored.

Bulbs can also be dried and ground fine into a flour, which you would then use as a thickener for stews or for any bread or pastry-type items.

WILD HYACINTH, aka BLUE DICK

(Dichelostemma pulchellum)

This is the only species of genus *Dichelostemma* in Arizona.

Use: Corms are edible.
Range: Found below 5,000 feet, on open slopes and plains.
Similarity to toxic species: Some bulbs in the Lily family could be toxic. Make sure you've identified the plant you intend to eat.
Best time: Spring is best because that's when you can tell where the plant is growing.
Status: Widespread, somewhat common
Tools needed: Digging tool

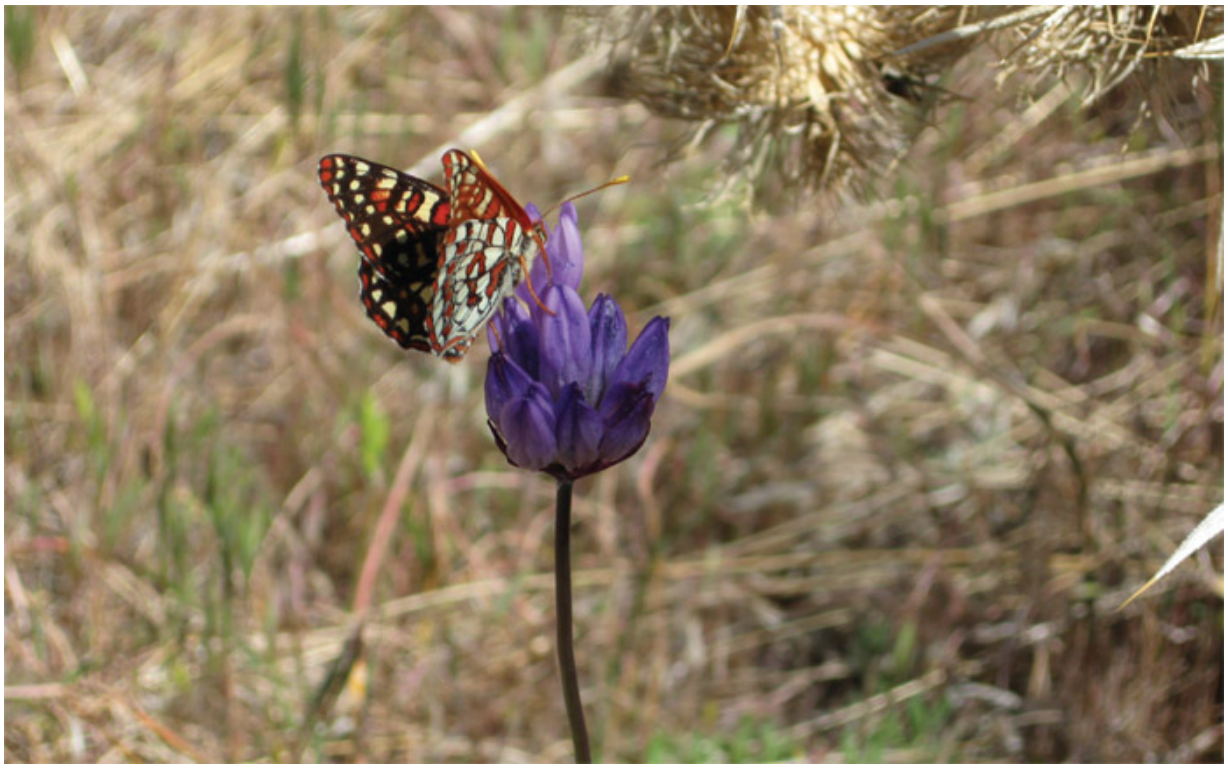
PROPERTIES

When this plant is in flower, it's easy to recognize and identify, but when it's dormant, it's entirely underground. Therefore, learn to recognize it in the spring when it sprouts up and learn to recognize where it grows.

The plant rises from an edible underground corm to a height of up to one and a half feet. The leaves are linear and grasslike, reaching an average length of about ten inches. Sometimes the plant is leafless. The flower stalk is from one to one and a half feet tall, erect, and topped by a head like umbel of four to ten purplish-blue flowers, with about four dark purple bracts at the base of the umbel. Each flower is about a half-inch long. The flower consists of three purple sepals, three similar-looking petals, six stamens, and one pistil, a typical Lily family pattern. The flower appears in the spring.

The root is a corm, similar in appearance to a bulb. Its diameter is approximately a half-inch to one inch, and it is covered in a brown papery sheath.

The corms of *Brodiaea* are very good raw or cooked, in salads, or as a snack. Those who dislike the chalky taste and slightly slimy texture of the raw corm prefer it cooked, although overcooking produces a rather flat flavor. Due to its blandness, the corm is a versatile food ingredient.



Wild hyacinth flower GINA RICHMOND

To get the corms out of the ground, you must carefully dig around and under the whole plant. A traditional digging stick works well. If you tug at the stalk to get the corm, the corm will almost invariably stay in the ground. When gathering, take only what you need and know you will use. Leave the small corms for reproduction.

A field of flowering wild hyacinths BARBARA EISENSTEIN

USES

This is a beautiful wildflower, and so I never dig any to eat unless they are very abundant. And then, I replant the smaller corms so they can continue to grow and propagate.

Wild hyacinth flower BARBARA EISENSTEIN

When I first learned about this plant, I recall looking around for it during my desert explorations but never found any. In fact, there is little indication that the plant is present except in the spring when it sends up its tall and leafless flower stalk.

In spring, when I found areas in the desert where this grew in abundance, I dug several and cleaned them. You can eat these raw, and they are pleasant, with a slightly mucilaginous texture.

All the indigenous peoples living where these grew used the corms raw or cooked. Cooking was done by boiling or steaming. These were typically eaten only in the spring because that’s when you find them.

The Paiute people were also known to roast the roots and grind them into flour for later use.

I’ve also eaten the long, linear leaves, and even the flowers, in salads and soups.

I’ve eaten these raw or cooked, in salads, or as a snack. It has a chalky taste and slightly mucilaginous texture when raw. When cooked, it is bland and goes well with many other foods.

If you try to pull up one of the corms, you will pull the stem, but the corm will nearly always stay in the ground. You need carefully to dig to get these out. And when you do harvest these for food, practice conservation and replant all the smaller corms that you don't eat. Your careful harvesting can actually contribute to the health and sustainability of a patch of the blue dicks.

CAUTIONS

In moderate amounts, there is no problem with eating these corms. However, when slightly larger amounts are eaten, generally raw or undercooked, diarrhea has been reported.

DESERT LILY (aka AJO LILY)

(Hesperocallis undulata)

This is the only species of genus *Hesperocallis*.

Use: Bulbs are edible.
Range: Below 2,000 feet in dunes and sandy flats, mostly in the southwestern part of the state
Similarity to toxic species: Make certain you've identified this plant when in flower. It's possible that if you only have the bulb, and you're not familiar with it, that you can confuse it for a toxic bulb.
Best time: Bulbs can be dug year-round.
Status: Not rare; fairly common
Tools needed: Digging tool

The desert lily flower LILY JANE TSONG

PROPERTIES

Arising from a bulb, which can be as much as two feet deep, this flower stalk can grow up to four feet tall in ideal conditions. The white flower has three petals and three sepals, all of which appear identical (so it looks as if there are six petals). Petals are white with a silver-green mid-stripe. The flowers bloom in the late winter and spring and are trumpet-shaped and fragrant.

A view of the desert lily plant, in the desert. Note the wavy margins of the leaves. LILY JANE TSONG

The linear leaves are a shade of bluish-green, with wavy margins. They are mostly basal. They can grow to about a foot and a half long.

USES

The plant is sometimes called the ajo lily because the bulb somewhat resembles the garlic bulb, which is *ajo* in Spanish.

The bulbs are about the size of a garlic bulb and can be eaten raw or cooked. The outer layer should be first removed, and then the starchy bulb eaten. If you've eaten *Brodiaea* bulbs, you'll find the flavor and texture somewhat similar.

After a winter of good rains, the flower stalks will arise and be present for maybe a month. This is really the only time you're going to find these unless you've located a patch that you can later identify by the dead stalks.

These bulbs were said to be eaten by the Quechan raw, baked in pits, or boiled. These are mild-flavored bulbs, and any method of preparation is

acceptable to most people.

The Cahuilla, farther west where the bulbs were more common, were also known to eat these either raw or baked in pits.

CAUTIONS

Some members of the Lily family with bulbs are poisonous if eaten—you could get sick, and in some cases, death could result. I don’t want to sound like a broken record with my warning, but make absolutely certain that you have correctly identified any bulbs that you intend to eat. If the aboveground leaves are dormant, many of the bulbs can look alike, so it is imperative that you have absolutely identified any bulbs as safe before you prepare them in your lunch.

GRASS FAMILY (POACEAE)

Formerly called *Gramineae*, there are 650 to 900 genera with about 10,550 species worldwide. There are so many species that the family is divided into five major categories. In Arizona, there are hundreds of species.

The Grass family has the "greatest economic importance of any family," according to botanist Mary Barkworth, citing wheat, rice, maize, millet, sorghum, sugarcane, forage crops, weeds, thatching, weaving, and building materials.

Use: Leaves for food (sprouts, juiced, etc.); seeds for flour or meal
Range: Grasses are truly found everywhere.
Similarity to toxic species: None
Best time: Somewhat varies depending on what grass we're talking about, but generally spring for the greens and summer to fall for seed.
Status: Very common
Tools needed: None

Ripening Indian rice grass, producing seed

PROPERTIES

The large plant family *Poaceae* (formerly *Gramineae*) is characterized by mostly herbaceous but sometimes woody plants with hollow and jointed stems; narrow, alternate sheathing leaves; petalless flowers borne in spikelets; and fruit in the form of seedlike grain. Ranging in size from little

annuals to giant bamboos, the family includes bamboo, sugarcane, numerous grasses (such as Mexican panic grass, *Panicum hirticaule*), and cereal grains such as barley, corn, oats, rice, rye, and wheat.

Wild oats

The flowering and seed structures are rather diverse, ranging from the stickery seeds of the foxtail grasses that get caught in your socks to the open clusters of sorghum, such seeds as rice and wheat, and the kernels of corn. Indeed, whole books have been written describing the diversity of this large family.

USES

The edibility of the wild grasses, generically, can be summed up in two categories: the young leaves and the seeds.

You may have had some of the leaves when you went to a health-food store and ordered wheatgrass juice. That's perhaps one of the best ways to eat various grass leaves—juice them. You can purchase an electric or a hand-crank juicer. I have juiced various wild-grass leaves and found the flavor to be quite diverse. Some have the flavor of wheatgrass juice and are good added to drinks or to soup broth. Some are very different, almost like seaweed, and these are typically better in soup. Whichever way you do it, get the grasses as young as possible. They are most nutritious at this stage, and they are less fibrous. You will discover that grasses contain a lot of fiber once you start to crank a hand juicer, watching the green liquid gold come out one end and the strands of fiber come out the other end.

If you don't have a juicer, you could eat the very young grass leaves in salads or soups, though you may find yourself chewing and chewing and spitting out fiber.

The seeds of all grasses are theoretically edible, though harvesting them is difficult—if not next to impossible—in some cases. Indigenous peoples of Arizona used many of the native grass seeds for food. Some grass seeds are easy to collect by hand. They are then winnowed. Some are very easy to winnow of the outer chaff; some are more problematic. I have taken some of the foxtail grass seeds, put them in a small metal strainer, and passed them through a fire to burn off the outer covering. Though I was left with a little seed, I found this method less fruitful than simply locating other grasses with more readily harvestable seeds.

The seeds you gather for food should be mature and have no foreign growths on them. Then you either grind them into flour for pastry products (bread, biscuits, etc.), or you cook them into mush (like a cereal mush).

There are thousands of species of grass worldwide on every landmass, and large numbers are found in Arizona. Not all of them will make a meal, but many will, so we should get to know them better.

CATTAIL FAMILY (TYPHACEAE)

The Cattail family contains two genera and about thirty-two species worldwide.

CATTAIL

Typha spp.

Use: Food (inner rhizome, young white shoots, green female spike, yellow male pollen); leaves excellent for fiber crafts where high tensile strength is not required
Range: Wetlands
Similarity to toxic species: None
Best time: Generally, the shoots and spikes are best collected in the spring. The rhizome could be collected at any time.
Status: Common in wetlands
Tools needed: Clippers, possibly a trowel

PROPERTIES

The *Typha* genus contains about fifteen species worldwide, with three of those species in Arizona.

The brown maturing cattail spikes break, and the seeds float everywhere on the wind, kept aloft by the cattail down attached to each seed. In this stage, the spikes are good for tinder, insulation, and stopping bleeding. RICK ADAMS

Everyone everywhere knows cattail—it's that grassy plant in the swamps that looks like a hot dog on a stick. Always growing in slow-moving waters or the edges of streams, cattail has long, flat leaves that grow six feet long and taller, arising from the underground horizontal rhizomes. When the plants flower in spring, the flower spike is green with yellowish pollen at the top. As it matures, the green spike ripens to a brown color, creating the familiar fall decoration—the hot dog on the stick.

The long leaves and the mature brown flower spike of the cattail

USES

Euell Gibbons, author of *Stalking the Wild Asparagus* and many other wild-food books, used to refer to cattails as the “supermarket of the swamps,”

which is a good description of this versatile plant.

There are at least four good food sources from the cattail, which I'll list in order of my preference.

In the spring, the plant sends up its green shoots. If you get to them before they stiffen and the flower spike has started, you can tug them up, and the shoot breaks off from the rhizome. You then cut the lower foot or so and peel off the green layers. The inner white layer is eaten raw or cooked. It looks like a green onion, but the flavor is like cucumber.

The green flower spike of cattail. On the top, yellow pollen can be shaken out and eaten. The lower green spike is eaten like corn on the cob. RICK ADAMS

The spike is the lower part of the flower spike, which is technically the female part of the flower. You find the spike in spring when it's entirely green and tender. Though you could eat it raw, it's far better boiled. Cook it, butter it, and eat it like corn on the cob. Guess what? It even tastes like corn on the cob. You could also scrape off the green edible portion from the woody core and add to stews or stir-fries, or even shape into patties (with egg or flour added) and cook like burgers.

The pollen is the fine yellow material that you can shake out of the flower spikes. The flower spike is divided into two sections—the lower female part, described above, and directly on top of that, the less-substantial male section, which produces the fine yellow pollen. If you're in the swamp at the right time, typically April or May, you can shake lots of pollen into a bag, strain it (to remove twigs and bugs), and use it in any pastry product.

The rhizome is also a good starchy food. Pull out the long horizontal roots from the mud, wash them, and then peel off the soft outer layer. You could just chew on the inner part of the rhizome if you need the energy from the natural sugar, or you could process it a bit. One method of processing involves mashing or grinding up the inner rhizome and then putting it into a jar of water. As the water settles, the pure starch will be on the bottom, and the fiber will be floating on the top, so you can easily scoop it out and discard it. The starch is then used in soups or in pastry and bread products.

Aside from cooking, the long green leaves have a lengthy history of being made into various woven products that will not be used under tension, such as baskets, sandals, hats, and even for the outer layers of the homes utilized by many indigenous peoples.

And when that cattail spike matures to a chocolate-brown color, break it open, and it all turns to an insulating fluff. Each tiny seed is actually connected to a bit of fluff that aids in the transportation of that seed to greener grass on the other side. You can use that fluff to stop the bleeding of a minor wound, as an alternative to down when stuffing a sleeping bag or coat, and as a fantastic fire starter!

Angelo Cervera shows the ready-to-cook green cattail spikes.

OTHER EDIBLES

Do you have a favorite Arizona wild food that isn't listed here? Remember, it was our intent to include those Arizona plants that are the most widespread, readily recognizable, and those that would make a significant contribution to your meals. We also wanted to have plants that represented most of the biological zones in our state. But as you continue your study of ethnobotany, you will discover that there are many more wild plants that could be used for food. Some are marginal, and some just aren't that great. I've eaten *Oxalis*, *Passiflora* fruits, leaves of *Caulanthus Inflatus*, *Malacothrix* leaves (ugh!), many other species of cacti, rushes, and others that are not in this book, for various reasons.

I have also eaten ragweed, various species of *Phacelia* and *Bidens*, telegraph weed, and many others that I never found described in a wild-food or ethnobotany book. Yes, they are edible, but after trying them, I realized why ancient people never used them, or only used them when nothing else was available.

Yes, there are many wild animals that could be used for food, but in this book, we are focusing solely on plants.

GETTING STARTED

EXPLORING THE FASCINATING WORLD OF WILD PLANTS

During the many field trips and classes that I have conducted since 1974, I have often been asked how I got interested in the subject of edible wild plants. I got interested because I backpacked and hated the weight of canned food! Plus, I was fascinated by the practical lifestyles of indigenous peoples who lived where I lived. I took botany classes in high school and college, read everything I could find on the subject, and attended lectures on ethnobotany whenever possible.

Here is how I suggest you go about your learning process.

- Don’t worry about trying to know everything at once. Take your time. Learn one plant at a time and learn it well. Find a skilled naturalist or botanist to go on a walk with you in your own backyard or neighborhood, somewhere close to where you live. Take lots of notes and photos for your review, but get out into the field with a knowledgeable person.
- Regularly review the plants you saw during your neighborhood walk. Observe their changes throughout the seasons so you know what they look like as a sprout, as an adolescent, as a mature and flowering plant, in fruit, and when dead. This is the sort of awareness that you cannot get from a book; it can only be gained by experience.
- Get to know the plants in your own backyard and in your own neighborhood. Get to know them as friends. Ask questions regularly of whoever is teaching you. Begin to use one plant at a time in your meals—one plant that you absolutely, unequivocally know is an edible wild plant. You don’t need to make entire meals from wild plants. Just begin by introducing one wild plant into your normal meals. You

might use the plant in a salad, in a soup, in a vegetable dish, in a stew. Get to know it. Then, repeat this with another plant.

- Believe it or not, most of what are called “common weeds” are edible and today are found worldwide. Thus, some of the likely plants you’ll be tasting in the beginning will be plants such as lamb’s-quarter, sow thistle, purslane, curly dock, dandelion, chicory, watercress, onions, wild grasses, mustards, and so on.
- There are no shortcuts to what is necessary: You must study, and you will need field experience.
- If there is any sort of shortcut to the study of plants, it is to learn to recognize plant families and learn to know which families are entirely safe for consumption. Beyond that, you must learn plants one by one for absolute safety.
- I strongly suggest that you take at least a college course in botany (preferably, taxonomy) so you get to know how botanists designate plant families. This will enable you to look at my list of safe families, and then, by using the books written by botanists of the flora of your area, you can check to see which plants in your area belong to any of the completely safe families. After a while, this will come easy. Eventually, you’ll look at a plant, examine it, and you’ll know what family it likely belongs to.
- When you discover that we have ruined the planet Earth in the name of “modern agriculture” that produces inferior food, you will understand the meaning of Pogo’s comment, “We have met the enemy, and he is us.”

TEST YOUR KNOWLEDGE OF PLANTS

Here is a simple test that I use in my classes. Take the test for plants and mushrooms and see how you do.

1. ❒ True. ❒ False. Berries that glisten are poisonous.
2. ❒ True. ❒ False. White berries are all poisonous.
3. ❒ True. ❒ False. All blue and black berries are edible.
4. ❒ True. ❒ False. If uncertain about the edibility of berries, watch to see if the animals eat them. If the animals eat the berries, the berries are good for human consumption.

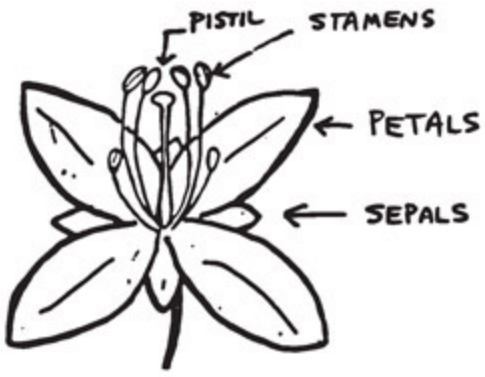
5. Would you follow this advice? State yes or no and give a reason.

   According to *Food in the Wilderness* authors George Martin and Robert Scott, “If you do not recognize a food as edible, chew a mouthful and keep it in the mouth. If it is very sharp, bitter, or distasteful, do not swallow it. If it tastes good, swallow only a little of the juice. Wait for about eight hours. If you have suffered no nausea, stomach or intestinal pains, repeat the same experiment swallowing a little more of the juice. Again, wait for eight hours. If there are no harmful results, it probably is safe for you to eat. (This test does not apply to mushrooms.)”

6. ❒ True. ❒ False. “A great number of wilderness plants are edible, but generally, they have very little food value.” (Martin and Scott, ibid.)
7. ❒ True. ❒ False. Bitter plants are poisonous.
8. ❒ True. ❒ False. Plants that exude a milky sap when cut are all poisonous.
9. ❒ True. ❒ False. Plants that cause stinging or irritation on the skin are all unsafe for consumption.
10. The illustration to the right is the typical flower formation for all members of the Mustard family. Write out the formula:

    ___ petal(s); ___ sepal(s);

    ___ stamen(s); ___ pistil(s).



11. What is the value of being able to identify the Mustard family?

12. ❒ True. ❒ False. Mustard (used on hot dogs) is made by grinding up the yellow flowers of the mustard plant.
13. ❒ True. ❒ False. Yucca, century plant, and prickly pears are all members of the Cactus family.
14. ❒ True. ❒ False. There are no poisonous cacti.
15. ❒ True. ❒ False. Plants that resemble parsley, carrots, and fennel are all in the Parsley or Carrot family and thus are all safe to eat.

16. ❒ True. ❒ False. Only seventeen species of acorns are edible; the rest are toxic.
17. To consume acorns, the tannic acid must first be removed. Why?
18. If you are eating no meat or dairy products (during a survival situation, for example), how is it possible to get complete protein from plants alone?
19. ❒ True. ❒ False. There are no toxic grasses.
20. ❒ True. ❒ False. Seaweeds are unsafe survival foods.
21. ❒ True. ❒ False. All plants that have the appearance of a green onion and have the typical onion aroma can be safely eaten.
22. List all of the plant families (or groups) from this quiz that we've identified as entirely or primarily nontoxic:

ANSWERS

1. False. Insufficient data.
2. False. Though mostly true, there are exceptions such as white strawberry, white mulberry, and others. Don't eat any berry unless you know its identity and you know it to be edible.
3. False. Mostly true, but there are some exceptions. Don't eat any berry unless you've identified it as an edible berry.
4. False, for several reasons. Certain animals are able to consume plants that would cause sickness or death in a human. Also, animals do occasionally die from eating poisonous plants—especially during times of drought. Also, just because you watched the animal eat a plant doesn't mean the animal didn't get sick later!
5. Very bad advice, even though this has been repeated endlessly in "survival manuals" and magazine articles. Because food is rarely your top "survival priority," this is potentially dangerous advice.
6. False. To verify that this is untrue, look at *Composition of Foods*, which is published by the US Department of Agriculture. In many cases, wild foods are far more nutritious than common domesticated foods.

7. False. Insufficient data. Many bitter plants are rendered edible and palatable simply by cooking or boiling.
8. False. Though you can't eat any of the euphorbias, many others (like dandelion, lettuce, milkweed, sow thistle, etc.) exude a milky sap. Forget about such "shortcuts." Get to know the individual plants.
9. False. Many edible plants have stickers or thorns that must first be removed, or cooked away, such as nettles and cacti.
10. Mustard flowers are composed of
    4 sepals (one under each petal)
    4 petals (the colorful part of the flower)
    1 pistil (in the very center of flower, the female part of the flower)
    6 stamens; 4 are tall and 2 are short. (The 6 stamens surround the pistil.)
11. There are no poisonous members of the Mustard family.
12. False. The mustard condiment is made by grinding the seeds. Yellow is typically from food coloring.
13. False. Only the prickly pear is a cactus.
14. True, but you must know what is, and is not, a cactus. There are some very bitter narcotic cacti that you would not eat due to unpalatability. Also, some euphorbias closely resemble cacti and will cause sickness if eaten. Euphorbias exude a milky sap when cut; cacti do not. Any fleshy, palatable part of true cacti can be eaten.
15. False. The Carrot family contains both good foods and deadly poisons. Never eat any wild plant resembling parsley unless you have identified that specific plant as an edible species.
16. False. All acorns can be consumed once the tannic acid is removed.
17. Tannic acid is bitter.
18. Combine the seeds from grasses with the seeds from legumes. This generally produces a complete protein. For more details, see *Diet for a Small Planet* by Frances Moore Lappé.

Traditional Diets That Combine Legumes and Grass Seeds to Make a Complete Protein

Loosely based upon "Summary of Complementary Protein Relationships," Chart X in *Diet for a Small Planet* by Lappé

	Legumes	**Grasses**
Asian diet	Soy (miso, tofu, etc.)	Rice
Southwest traditional diet	Beans (black beans, etc.)	Corn (tortillas)
Middle East diet	Garbanzos	Wheat
Southern United States	Black-eyed peas	Grits
Starving student	Peanut butter	Wheat bread
Others to consider	Mesquite, paloverde, peas, carob, etc.	Millet, rye, oats, various wild grasses, etc.

19. True; however, be certain that the seeds are mature and have no mold-like growth on them.

20. False. Seaweeds are excellent. Make certain they've not been rotting on the beach, and don't collect near any sewage treatment facilities. And yes, we know there are no seaweeds in Arizona, but some of us sometimes travel beyond the state lines to the Gulf or west to the Pacific.

21. True. But be sure you have an onion!

22. All members of the Mustard family, all palatable cacti, all acorns, all cattails, grasses, seaweeds, and onions. There are many other "safe" families, but you will need to do a bit of botanical study to identify those families. Begin by reading the descriptions of each family in this book. Also consider reading *Botany in a Day: The Patterns Method of Plant Identification* by Tom Elpel.

THE DOZEN EASIEST-TO-RECOGNIZE, MOST WIDESPREAD, MOST VERSATILE WILD FOODS OF ARIZONA

In the mid-1970s, I began to investigate the edibility of whole plant families and found that there were quite a few entire families that are safe to eat, given a few considerations in each case. Some of these families are difficult to recognize unless you are a trained botanist. Still, in this book, I have described many of the entirely safe families. My original research on this was done with Dr. Leonid Enari, who was one of my teachers and chief botanical mentor.

The chart below was the idea of my friend Jay Watkins, who long urged me to produce a simple handout on the dozen most-common edible plants that everyone should know. Granted, there are many more than a dozen, but as Jay and I discussed this idea, I decided to focus on twelve plants that could be found not just anywhere in the United States but in most locales throughout the world. The result is largely self-explanatory. This chart assumes that you already know these plants because its purpose is not identification. Anyone who has studied wild foods for a few years is probably already familiar with all these plants. However, not everyone is aware that these plants are found worldwide.

This overview should help both beginners as well as specialists. It is a simple comparative chart that could be expanded to many, many pages, but I've deliberately kept it short and simple.

	Description	**Parts used**	**Food uses**	**Preparation**	**Benefits**	**Where found**	**When found**
Acorns	Fruit of the oak tree	Acorns (nuts)	Flour, pickles, mush	Leach out tannic acid first, then grind	Similar to potatoes	Mountains, valleys	Fall
Cacti	Succulent desert	1. Tender	1. Salad; cooked	1. Carefully remove	Pads said to be good for	Dry desertlike environments;	Young green

	plants of various shapes	parts 2. Fruit	vegetable; omelet 2. Dessert; drinks	spines 2. Dice or slice as needed	diabetics; fruits rich in sugar	Mediterranean zones	pads in spring and summer; fruit in summer and fall
Cattail	Reedlike plants; fruit looks like hot dog on a stick	1. Pollen 2. Green flower spike 3. Tender shoots 4. Rhizome	1. Flour 2. Cooked vegetable 3. Salad 4. Flour	1. Shake out pollen 2. Boil 3. Remove outer green fibrous parts 4. Remove outer parts and crush	Widespread, versatile	Wet areas, e.g., roadside ditches, marshes	Spring through fall
Chickweed	Weak-stemmed, opposite leaves, five-petaled flower	Entire tender plant	Salad or tea	Rinse and add dressing; or make infusion	Good diuretic	Common and widespread when moisture is present	Spring and summer
Curly Dock	Long leaves with wavy margins	1. Leaves 2. Stems 3. Seeds	1. Salad; cooked vegetable 2. Pie 3. Flour	1. Clean 2. Use like rhubarb 3. Winnow seeds	Richer in vitamin C than oranges	Common in fields and near water	Spring through fall
Dandelion	Low plant, toothed leaves, conspicuous yellow flower	1. Roots 2. Leaves	1. Cooked vegetable; coffee-like beverage 2. Salad or cooked vegetable	1. Clean and cook; or dry, roast, grind 2. Clean and make desired dish	Richest source of beta-carotene; very high in vitamin A	Common in lawns and fields	Best harvested in spring
Grasses	Many widespread varieties	1. Seeds 2. Leaves	1. Flour and mush 2. Salad 3. Juiced 4. Cooked vegetable	1. Harvest and winnow 2. Harvest, clean, and chop	1. Easy to store 2. Rich in many nutrients	Common in all environments	1. Fall 2. Spring
Lambs-Quarter	Triangular leaves with toothed margins, mealy surface	1. Leaves and tender stems 2. Seeds	1. Salad; soup; omelets 2. Bread; mush	1. Harvest; clean 2. Winnow	Rich in vitamin A and calcium	Likes disturbed, rich soils	Spring through fall
Mustard	Variable leaves with large terminal lobes; four-	Leaves, seeds, some roots	Salads; cooked dishes; seasoning	Gather, clean, and cut as needed	Said to help prevent cancer	Common in fields and many environments	Spring through fall

	petaled flowers						
Onions	Grasslike appearance; flowers with three petals and three sepals	Leaves, bulbs	Seasoning; salad; soup; vegetable dishes	Clean, remove tough outer leaves	Good for reducing high blood pressure and high cholesterol levels	Some varieties found in all environments	Spring is best
Purslane	Low-growing succulent, paddle-shaped leaves	All tender portions	Salad; sauteed; pickled; soup; vegetable dishes	Rinse off any soil	Richest known plant source of omega-3 fatty acids	Common in parks, gardens, disturbed soils	Summer
Seaweeds	Marine algae of many shapes and colors	Entire plant, minus holdfast	Depends on species: salad, soup, stew, broth	Use dried, raw, or cooked, depending on species	Excellent source of iodine; great salt substitute	Oceans (yes, we know there are no oceans in Arizona! But it's still good to know this.)	Year-round
Latin Names: Acorns = *Quercus* spp.; Cacti = *Cactacea* (Cactus family); Cattail = *Typha* spp.; Chickweed = *Stellaria media*; Curly dock = *Rumex crispus*, Dandelion = *Taraxacum officinale;* Grasses = *Poaceae* (Grass family); Lamb's-quarter = *Chenopodium album*, Mustard (Mustard family Brassicaceae) = *Brassica* spp.; Onions = *Allium* spp.; Purslane = *Portulaca oleracea*							

STAFF OF LIFE: BEST WILD-FOOD BREAD SOURCES

The baking of bread goes back to the most ancient cultures on the Earth, back when humankind discovered that you could grind up the seeds of grasses, add a few other ingredients, let it rise, and bake it. There are countless variations, of course, but bread was once so nutritious that it was called the “staff of life.”

Most likely the discovery of bread predated agriculture because the earth was full of wild grasses and a broad assortment of roots and seeds that could be baked into nutritious loaves. Most grains store well for a long time, which allowed people the time to pursue culture, inner growth, and technology. The development of civilizations and the development of agriculture go hand in hand, and bread was right there from the beginning.

Today, we are at another extreme of a very long road of human development. We started with the struggle for survival and with the surplus of the land allowing us the time to develop more fully in all aspects. That good bread from the earth was heavy, rich, extremely nutritious. It was a vitamin and mineral tablet.

We produced so much grain that the United States called itself “the breadbasket of the world.” And this massive volume resulted in losses from insects in the fields and also due to spoilage. Then came the so-called “Green Revolution” where chemical fertilizers replaced time-honored fertilizers such as animal manures, straw and hay, compost, bonemeal, and other such natural substances that the modern farmer was too busy and too modern to use. Crops increased while the nutritional values dropped. And though this is a gross oversimplification, bread from the supermarket is no longer the staff of life. The mineral content of the once-rich soils of the United States has steadily declined. Producers process and refine “white flour” and then add certain minerals back into the flour itself. We sacrificed quality as we thought it would bring us security, and we knew it would

bring big bucks. Now the great irony is that we lost the quality of the food, of the soil, and ultimately, we are no more secure than ever before. Why? Because a soil rich in natural organic matter can withstand floods and droughts and the ravages of insects. It is the folly of man that causes the droughts and plagues of modern times.

There is much—very much—that we need to learn about modern agriculture or "agribiz" as it is more appropriately called. We should not put our heads into the sand, ostrich like, and pretend the problem does not exist.

Personal solutions are many. Grow your own garden. Learn about wild foods, and use them daily.

By using common wild plants, you can actually create nutritious breads that are comparable to the breads your ancestors ate. The easiest way to get started is to make flour from these wild seeds and mix that flour fifty-fifty with your conventional flours, such as wheat. You'll end up with a more flavorful, more nutritious bread, pancake, or pastry product. And once you begin to use your local wild grains, you'll be amazed how tasty, how abundant, and how versatile these wild foods are.

The accompanying chart, page 261, is by no means complete. It is a general guideline to show you what is available over widespread areas. However, there are quite a few plants of limited range that produce abundant seeds or other parts suitable for bread making.

Note that "Grass" is a huge category as it actually includes many of our domestic grains such as wheat, corn, rye, and barley. Though some of the seeds listed on this chart can be eaten raw, most require some processing before you can eat them. Acorns must be soaked or boiled to get rid of all the bitter tannic acid. Agave and yucca seeds and fruits are bitter and soapy and must be cooked first. The seed from amaranth, dock, and lamb's-quarter can get somewhat bitter and astringent as it gets older; it is improved by cooking.

By rediscovering the wealth of wild plants that are found throughout Arizona, we can bring bread back to its status as the "staff of life."

RECIPE

Beginner Wild Bread

1 cup whole wheat flour

1 cup wild flour of your choice

3 teaspoons baking powder

3 tablespoons honey

1 egg

1 cup milk

3 tablespoons oil

Salt to taste, if desired

Mix all ingredients well and bake in oiled pans for about forty-five minutes at 250ºF or in your solar oven until done.

Beginner Pancake Recipe

Follow the above recipe, add extra milk or water until you have a pancake-batter consistency. Make pancakes as normal.

"WILD BREAD" CHART

	Parts used	How processed	Where found	Palatability	Ability to store
Acorns	Shelled acorns	Leach acorns of tannic acid by soaking or boiling and grind into meal	Worldwide; ripens in fall	Good, if fully leached	Excellent
Agave	Seeds and fruits	Seeds boiled and ground; fruits boiled and mashed	Southwest US, Mexico, and dry environments	Good if cooked	Very good
Amaranth	Seeds	Collect and winnow seeds	Worldwide as a weed of disturbed soils	Very good	Very good
Cactus	Seeds	Mash ripe fruits, pour through colander to extract seeds	Throughout US, though most common in Mediterranean climates worldwide	Good	Good
Cattail	Pollen and rhizome	Shake the top of cattail spikes into bag to collect pollen; mash peeled rhizome and separate out fiber	Worldwide in wet and marshy areas	Very good	Good
Dock	Seeds	Collect brown seeds in fall, rub to remove	Worldwide in wet areas and disturbed	Acceptable	Very good

		“wings”; winnow	soils		
Grass (most species)	Seeds	Generally, simply collect and winnow; difficulty depends on species	Worldwide, some found in nearly every environment	Generally very good	Very good to excellent
Lamb’s-Quarter	Seeds	Collect when leaves on plant are dry; rub between hands, winnow	Worldwide in disturbed soils and farm soils	Acceptable to good	Very good
Mesquite	Entire pod	The entire pod is ground into flour	Widespread throughout Southwest	Excellent	Very good
Wild Buckwheat	Entire seed heads	Collect entire mature head, pick out stems, grind	Western US and Mediterranean climates	Very good	Very good
Yucca	Seeds and fruit	Collect black seed from mature fruit and grind; mash up fruit when insides are still white	Southwestern US and northern Mexico	Acceptable	Very good

Note: This chart is intended only as a general guideline to compare sources for “wild bread” ingredients. There may be many other wild plants that can be used for bread. Never eat any wild plant that you have not positively identified as an edible species. **Latin names:** Acorns = *Quercus* spp.; Agave = *Agave* spp.; Amaranth = *Amaranthus* spp.; Cactus = primarily *Opuntia* spp. and other Cactaceae; Cattail = *Typha* spp.; Curly dock = *Rumex crispus;* Grass = Poaceae (family); Lamb’s-quarter = *Chenopodium album;* Mesquite = *Prosopis glandulosa;* California buckwheat = *Eriogonum fasciculatum;* Yucca = *Hesperoyucca* spp.

SWEET TOOTH: BEST WILD-FOOD SUGARS AND DESSERTS

When people speak of sugar today, they are almost always speaking of the highly refined, nutrition-less white substance made from sugarcane or sugar beets. Unfortunately, modern sugar is a foodless food. It is the cocaine of the modern human's dinner plate. It is not good for the body, and it offers no nutrients whatsoever. It has not always been so.

Just a few generations ago, it was common for people to make their own sugars. Every culture had their favorite sources for their sugars, depending on what was found in the wild or what was grown in that particular location. In most cases, they simply collected, dried, and ground-up sugar-rich fruits. Most such fruits will naturally crystallize with time and then could be further ground. The advantage of these sugars over white cane sugar is that these sugars had their own individual flavors, and they contained many valuable minerals.

Some sugars are quite simple to produce, such as honey. Its main obstacles are to find a way to house the bees—something modern beekeepers do quite well—and to keep from getting stung. And tapping maple trees (and several other trees) was so simple that even the North American Indians did it, mostly in the Northeast. They simply cut narrow slashes into the tree, inserted hollow tubes made from elder branches, and collected the sap in whatever containers they had. Raw maple sap is usually boiled down to get a syrup of the desired consistency and sugar content. Sometimes you boil off about forty gallons of water for each gallon of syrup. You do not do this indoors.

People have always sought ways to make foods more flavorful, and sugar is certainly useful in that regard. But sugar is also valuable as a preservative. Both sugar and salt help to preserve foods and keep them from spoiling. This was especially important in the past when there was no electricity or refrigerators.

It’s amazing how fast a modern culture forgets things. Probably not one in a thousand urbanites knows these simple details about sugar. Our culture has sunk to such ignorance in this matter that we somehow believe that the only choice is between white sugar, the pink container, or the blue packet. Rather than produce nutritious sugars as we had in the past, the trend is to produce high-tech sweet substances that not only have no nutrients but have no calories either, as does white sugar. The wonders of science never cease!

For those of you who want to try making sugar, the following chart gives you some ideas as to what is available. Currants and gooseberries were very popular among indigenous peoples more as a preservative than a sweetener. They ground their jerky and added crushed currants or gooseberries, and the result was pemmican.

Though many of the wild berries described in the chart have been used as sweeteners for other foods, most of them are good in their own right and have long been used to make such things as drinks, pies, jams, custard, and a variety of dessert items. Details for these can be found in many of the wild-food cookbooks available.

Here’s one recipe that can be used with all of the sugars on the chart except carob, maple, and manzanita; these three are not fleshy berries so they won’t cook up like the others.

RECIPE

Appalachian Brickle

½ gallon ripe berries (wild berries of your choice)

Water to cover berries

½ cup honey

Approximately ⅓ cup biscuit mix

Begin by gently cooking the washed berries in just enough water to cover them. When they are cooked, pour off the water, add fresh water, and cook a little longer. Then add just a little water, add the honey, and stir. After the mixture thickens, add the biscuit mix, little by little, and stir. The mix will be very thick when it is ready to serve.

This makes a heavy, sweet dessert. In the old days, what wasn't eaten of this would be put into a bread pan and baked until dry so it would store. It would then last a long time until reconstituted. The dried shape looked like a brick, which is the source of the name.

Sweet Tooth: Best Wild-Food Sugars and Desserts

	Part used	How processed	Where found	Sweetness/palatability	Ability to store
Apples, Wild (including crab apples)	Whole fruit	Use fresh, or slice, dry, and grind to flour	Entire US	Very good; collect when ripe	Very good
Berries (black-, rasp-, thimbleberries)	Whole fruit	Use fresh, or dry and grind	Entire US	Excellent	Very good
Carob	Whole pod	Remove seeds, grind entire pod; use fresh or dried	Southern half of US, Mediterranean climates	Good; rich source of calcium	Very good
Currants	Whole fruit	Use fresh, or dry and store	Entire US	Good	Very good
Elderberry	Whole fruit	Use fresh if cooked first; or dry and store	Entire US	Contains sugar but tart	Good
Gooseberries	Whole fruit	Remove spiny layer, then use fresh or dried	Entire US	Good	Very good
Grape, Wild	Whole fruit	Use fresh or dried	Most of the US	Sometimes tart; collect ripe fruit	Very good
Manzanita	Whole fruit	Dry and grind the pulp around the seed, but not the seed	Southwestern US	A bit tart; used like aspic	Good
Maple	Sap	Cut bark on tree, capture sap; use fresh; crystallizes naturally	Entire US, but flows best where there is snow	Excellent	Excellent
Prickly Pear Cactus	Fruit	Remove stickers, use inner pulp fresh or dried, with or without seed	Entire US, but most common in Southwest	Excellent	Good
Mesquite	Pods	Entire pods ground into a flour	Southwest	Excellent	Very good

Note: There are many sugars found in nature, usually in the fruits. Honey is a traditional sugar, made indirectly from plant nectars. Other traditional sugars include dried and powdered dates, dried pomegranate juice, and beets. This chart compares a few wild sugar sources that are the most widespread throughout North America. There are many plants that are either marginal sugar sources or available in very limited locations. Never use any wild plant for sugar or food until you have positively identified it as an edible plant.

Latin names: Apples = *Malus* spp.; Berries = *Rubus* spp.; Carob = *Ceratonia siliqua;* Elderberry = *Sambucus* spp.; Currants and Gooseberries = *Ribes* spp.; Grape, wild = *Vitis* spp.; Manzanita = *Arctostaphylos* spp.; Maple = *Acer* spp:, Prickly pear cactus = *Opuntia* spp.; Mesquite = *Prosopis glandulosa*

USEFUL REFERENCES

CLASSES

Learning about plants, and their traditional uses, is something that requires direct fieldwork. Fortunately, here in Arizona, we have Cody Lundin, who has been the top instructor with his Aboriginal Living Skills School for about thirty years. He teaches courses on self-reliance, survival, and the uses of wild plants for food and utility. He's highly recommended. Contact him at abodude@codylundin.com or check his website at www.codylundin.com.

Mark Lewis of Arizona teaches traditional ecological knowledge, cooking, and horticulture classes about the wild edible plants and fungi of the greater Southwest. The author of two books, his classes focus on nutrition, plant identification and taxonomy, traditional Native culture, and plant uses. Contact Lewis at manujib@yahoo.com.

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ABOUT THE AUTHOR

Christopher Nyerges, cofounder of the School of Self-Reliance, has led wild-food walks for thousands of students since 1974. He has authored over a dozen books on wild foods, survival, and self-reliance and thousands of newspaper and magazine articles. He continues to teach where he lives in Los Angeles County, California. More information about his classes and seminars is available at www.schoolofself-reliance.com, on Facebook, or by writing to School of Self-Reliance, Box 41834, Eagle Rock, CA 90041.

Other Books by the Author

Foraging California, Second Edition

Foraging Idaho
Foraging Washington
Foraging Oregon
Foraging Wild Edible Plants of North America
Nuts and Berries of California
How to Survive Anywhere, Second Edition
The Self-Sufficient Home
Guide to Wild Foods and Useful Plants
Testing Your Outdoor Survival Skills
Extreme Simplicity
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Guide to Making Fire without Matches